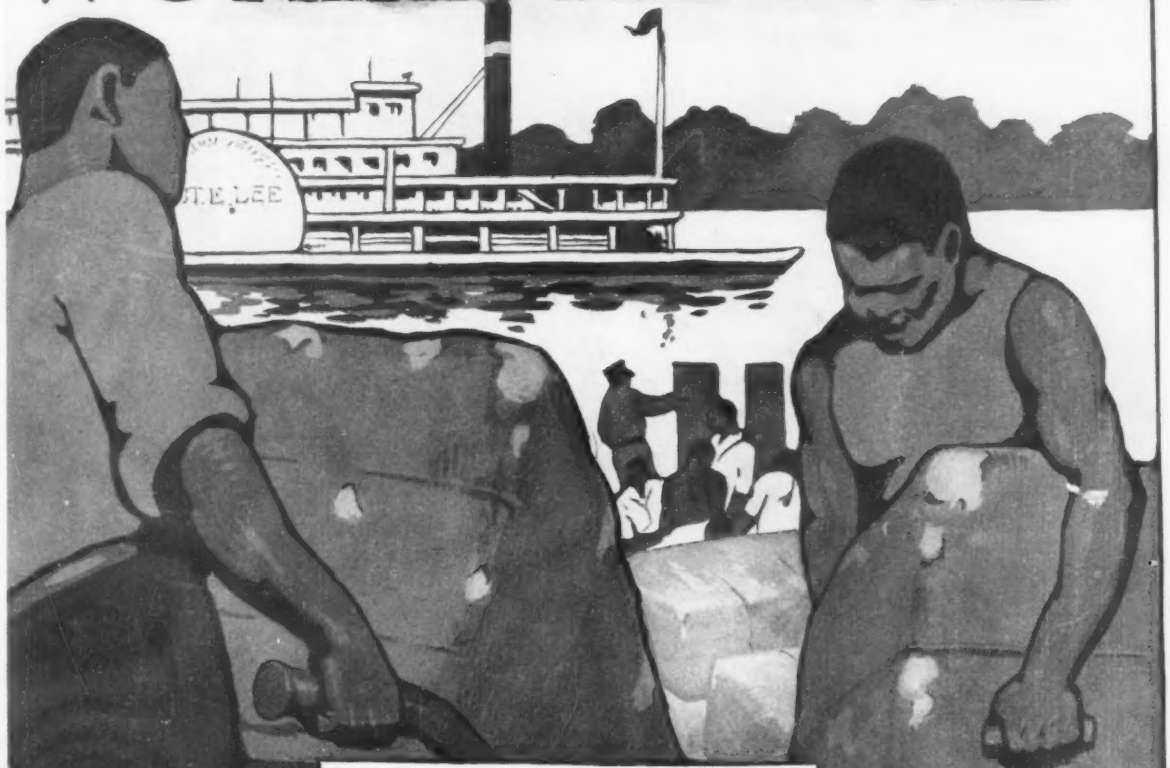
er 1
ne XLV APR 19 1913 APRIL, 1913 $2.00 per year
$3.00 with Directory

TEXTILE WORLD RECORD



Special Features

The Washington Convention of the American Cotton Manufacturers Association

The Underwood Cotton Tariff

Agitation for a Pure Textile Law

Worsted Serges from Yorkshire

APR 19 1913 CONGRESS DIVISION

LORD & NAGLE CO.-BOSTON MASS.

ble of Contents Page 67 Buyers Index Page 195 Index to Advertisements Page 205

The TEXTILE-FINISHING MACHINERY CO.

Howard Building, Providence, R. I.

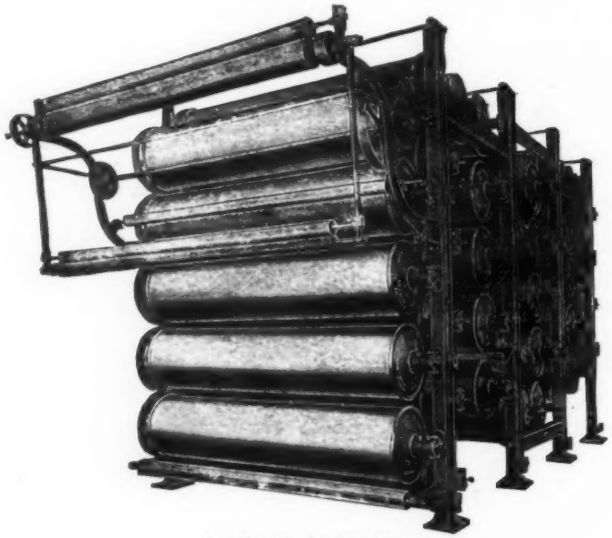
BUILDERS OF

Singeing, Bleaching, Mercerizing, Dyeing, Drying, Printing and Finishing Machinery

FOR

TEXTILE FABRICS AND WARPS

Plans and Estimates for Complete Plants



Upright Drying Machine

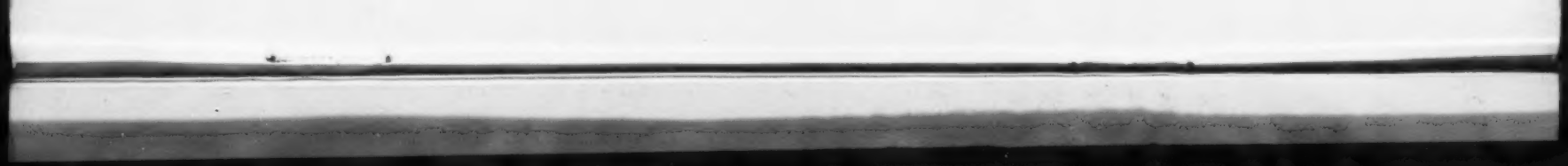
ALL KINDS OF

Horizontal and Upright Drying Machines

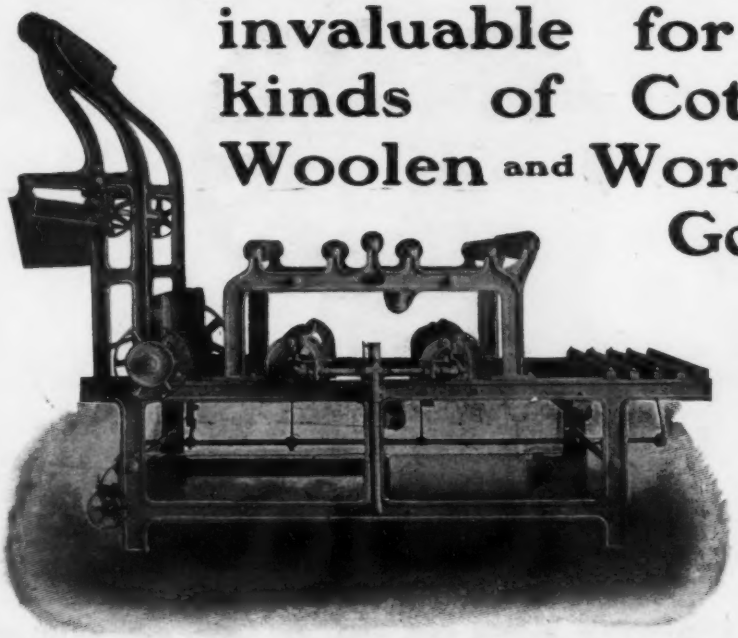
With cylinders made from either the best English tinned iron or best Lake Superior sheet copper, fitted with our

Patent Spiral Scoops

Dryers especially designed for narrow fabrics, cotton, woolen and worsted goods and cotton warps



A Singeing Machine that's invaluable for all kinds of Cotton, Woolen and Worsted Goods



Note its many special advantages

The face and back of cloth can be singed at same operation.

Extreme facility of working, as the cloth is always seen by the operator, and the flame can be removed and machine stopped instantly, thus avoiding any chance of damaging the goods.

Two pieces can be singed at one time in the same machine. The width of the flame is limited exactly to the width of the goods, thus preventing any waste of gas.

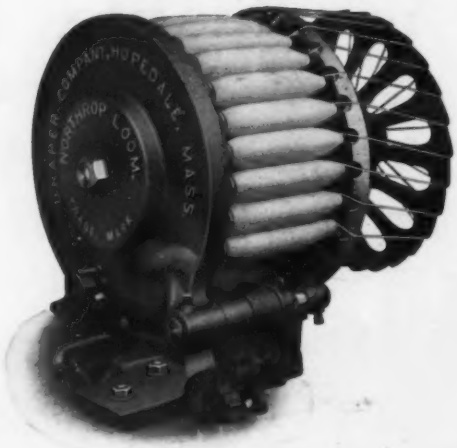
Compressed air is delivered into a large receiver, and the gas and air mixed at a uniform pressure, insuring a steady and perfect flame.

The combustion being complete, not the least trace of soot can be found even on the most delicate goods.

H. W. BUTTERWORTH & SONS CO.

PHILADELPHIA, PA.

BLEACHING, DYEING, DRYING AND FINISHING MACHINERY FOR SILK, COTTON AND WORSTED FABRICS.



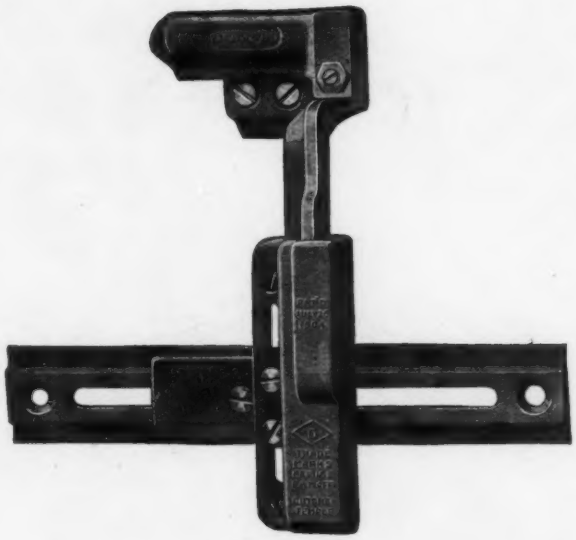
NORTHROP LOOMS

TRADE MARK REGISTERED

EARN More Wages for the Weaver
Larger Dividends for the Mill

DRAPER COMPANY

HOPEDALE, MASS.



DUTCHER TEMPLES

Trade Mark Reg. U. S. Pat. Off.

DRAPER COMPANY

SOLE MANUFACTURERS

HOPEDALE, MASS.

Another recent installation

400 "Ideal" Automatic Looms

on 5 harness sateens

These looms were installed as the result of a test during which the superiority of Stafford Looms over all competitors was clearly demonstrated

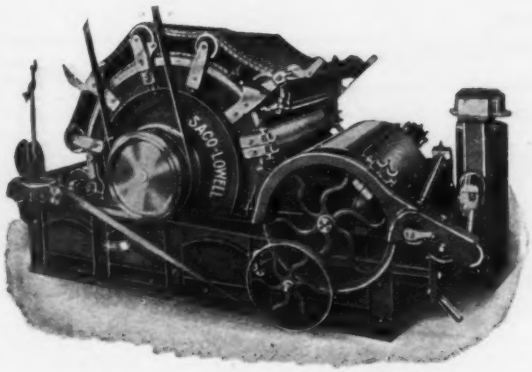
THE STAFFORD COMPANY

READVILLE, MASS.

FRED H. WHITE, Southern Agent - - Charlotte, N. C.

Saco-Lowell Shops

TEXTILE MACHINERY



Shops—
Lowell, Mass.
Biddeford, Maine
Newton Upper Falls, Mass.

Executive Offices—
77 Franklin Street
Boston, Mass.

Southern Agent, ROGERS W. DAVIS,
Charlotte, N. C.

Complete Cotton Mill Equipment Including: Pickers, Cards Drawing Roving Spinning Twisters Slashers Spoolers Warpers Looms

Waste Reclaiming Machinery

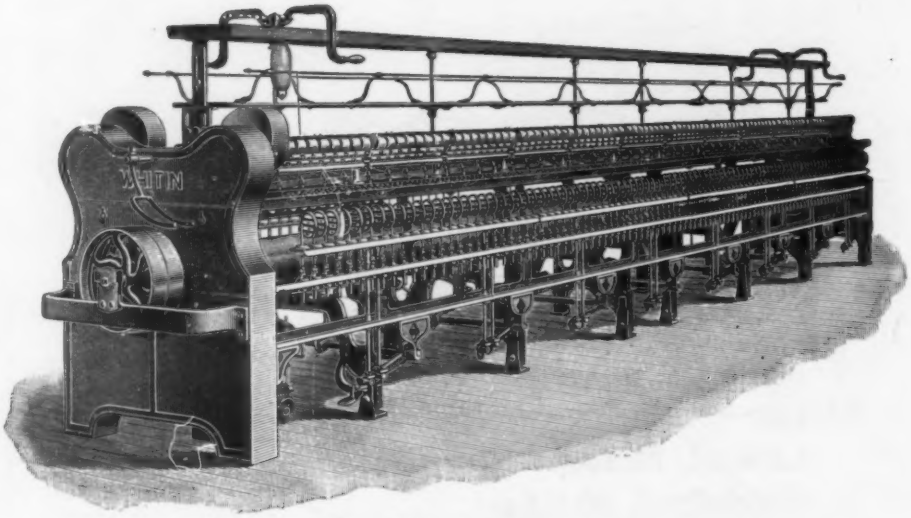
Worsted Machinery Including: Revolving Reels, Gill Boxes Drawing Frames, Reducing and Roving Frames, Cap Ring and Fly Spinning and Twisting Frames Jack Spoolers

The Whitin Machine Works

Whitinsville, Mass.

BUILDERS OF

Cotton Mill Machinery



Ring Spinning Frame

CARDS
COMBERS
DRAWING FRAMES
ROVING FRAMES
SPINNING FRAMES
SPOOLERS
TWISTERS
REELS
LONG CHAIN QUILLERS
LOOMS AND DOBBIES

Southern Agent: STUART W. CRAMER, Charlotte, N. C.

COOL YOUR MILLS

WITH

A CARRIER SYSTEM

On June 22, 1910, we telegraphed several mills who were equipped with the **CARRIER SYSTEM,** requesting them to advise us the conditions in their mill on that date, and we give below one of the replies received.

Form 158

THE WESTERN UNION TELEGRAPH COMPANY

INCORPORATED

25,000 OFFICES IN AMERICA. CABLE SERVICE TO ALL THE WORLD

This Company TRANSMITS and DELIVERS messages only on conditions limiting its liability, which have been assented to by the sender of the following message. Errors can be guarded against only by repeating a message back to the sending station for comparison, and for this service one-half the unrepeated message rate is charged. Neither this Company nor any other telegraph company will be liable for errors or delays in transmission or delivery of Unrepeated Messages, beyond the amount of tolls paid thereon, nor in any case where the claim is not presented in writing within sixty days after the message is filed with the Company for transmission. This is an UNREPEATED MESSAGE, and is delivered by request of the sender, under the conditions named above.

ROBERT C. CLOWRY, PRESIDENT — BELVIDERE BROOKS, GENERAL MANAGER

RECEIVED AT the WESTERN UNION BUILDING, 195 Broadway, N. Y. ALWAYS OPEN JUNE 22, 1910 2:43 p.m.

Q 273 p 16 COLL

LEWISTOWN, PA. 22

CARRIER AIR CONDITIONING CO.

NEW YORK

TEMPERATURE OUTSIDE DRY NINETY EIGHT WET FORTY FOUR

INSIDE DRY EIGHTY THREE WET SEVENTY FIVE

SUSQUEHANNA SILK MILLS

These conditions can be maintained in your mill also.

Write us today for catalog or engineer to call and tell you just how it can be done.

CARRIER AIR CONDITIONING COMPANY

OF AMERICA

39 Cortlandt Street, New York

NEW ENGLAND	CHICAGO	PHILADELPHIA
E. T. Lyle, 1862 Beacon St.	Ft. Dearborn Bldg.	732 Real Estate Trust
Brookline, Mass.	Clark and Monroe Sts.	Bldg.

LEIGH & BUTLER

SUCCESSORS TO

EVAN ARTHUR LEIGH

232 Summer Street (opposite the South Station), Boston, Mass.

SOLE AGENTS

IN THE UNITED STATES AND CANADA FOR

Platt Bros. & Co., Ltd.

BY FAR THE LARGEST MAKERS IN THE WORLD OF

Cotton, Woolen and Worsted Machinery

Platt's Patent Opening and Picking Machinery.
Platt's Cotton Comber — will comb from 7-8" stock to Sea Islands.
Platt's Special Machinery for Making Cotton Waste into Yarns.
Platt's Special Machinery for Making French Worsted Yarns.
Platt's Woolen and Worsted Carding Engines, Special Designs.
Platt's Cotton, Cotton Waste, Woolen and Worsted Mules.

MATHER & PLATT, LTD.

Dyeing and Finishing Machinery.
Archbutt-Deeley System for purifying and softening water.

JOSEPH SYKES BROS. Card Clothing for Cotton.
JAMES CRITCHLEY & SONS. Card Clothing for Woolen and Worsted.
WILSON BROS. BOBBIN CO. Bobbins, Shuttles, Etc.
THOMAS B. HAIGH. Double Loop Bands, Spinning Tape, Etc.
DRONSFIELD BROTHERS. Grinding Machinery and Emery Filleting.
HARDING'S Fallers, Pins and Circles.
The Best French and English Combing and Rubbing Aprons.
Card Flats reclothed and Lickers-in rewound.

FOR

VELVETS

Our latest **MONFORTS**

Plush Pile Splitting Machine

and

Monforts Ball Bearing Nappers

Monforts new cloth cleaning emery machine
double acting on both sides of goods

Hank Mercerizing Machine

new patented process for more lustre and
fuller yarn

EGYPTIAN COTTON

CHINA COTTON
AMERICAN COTTON

L. H. A. SCHWARTZ & CO.

40 Central Street **Boston, Mass.**

Are you troubled with Alligatoring?

There is an easy way out—don't use a paint containing varnish. Gloss paints containing varnish grow harder, become brittle with age and are liable to cause "alligatoring"—or cracking—and then scaling.

RICE'S MILL WHITE

Rice's Mill White is an OIL paint giving a GLOSSY, tile-like finish without the use of varnish. It is *elastic*, which enables it to retain a smooth, unbroken surface in spite of the contraction and expansion due to changes of temperature. It is unaffected by the jar of machinery. It remains white longer than any other gloss paint.

We were the originators of "Mill White Paint." None of its imitations has the elastic, durable qualities which made the reputation of "Mill White" paint.

Rice's Mill White paint is sold direct in barrels containing sufficient paint to cover 20,000 square feet, one coat. If you have that area of ceiling and wall space to cover,

Write for Booklet and Sample Board

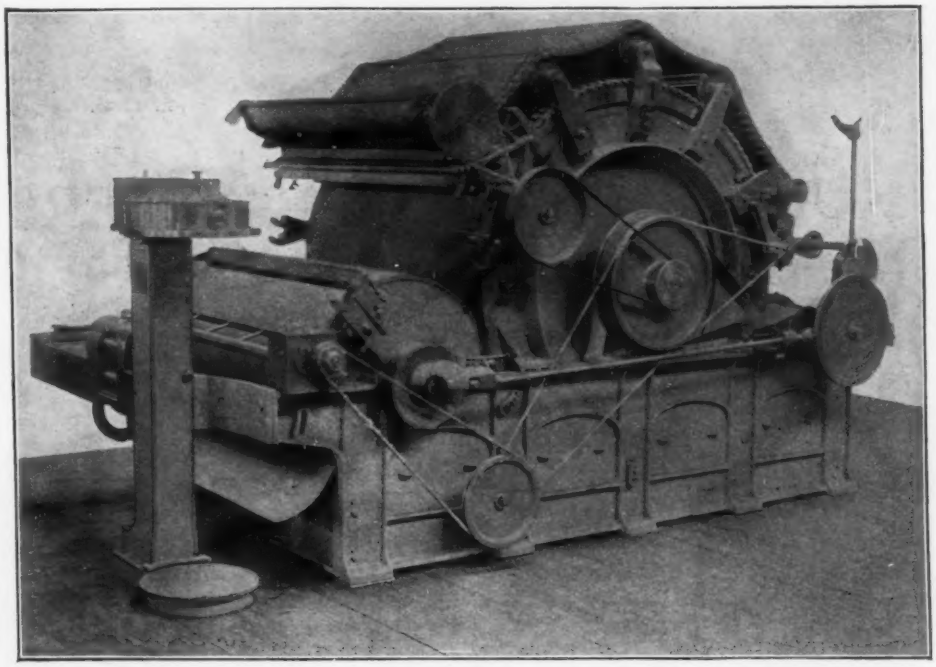
Ask for a copy of our booklet, "More Light." *Write today.*

U. S. Gutta Percha Paint Co.
20 Dudley Street
PROVIDENCE, R. I.

MASON MACHINE WORKS

Taunton, Mass. **Charlotte, N. C.**

Builders of
Revolving Flat Cards, Drawing Frames,
Spinning Frames, Looms, Dobbies, Etc.



Superior Loom Cranks for Repairs

GUTTA-BALATA BELTING

TRADE-MARK

Has the least stretch of any belt made.

Either side can be run next the pulleys.

It is waterproof and runs successfully in damp places.

It is adapted for high speeds and for use where grease and oils come into contact with the belt.

All Gutta-Balata belts 4-ply and heavier are made absolutely seamless.

Send for descriptive booklet.

RUBBER-COVERED ROLLERS

New Rollers Complete **Rollers Re-Covered**

We furnish rubber-covered rollers for all purposes for which such rollers are or can be used in Textile Mills. The quality of our rubber coverings is rigidly maintained at its well-known high standard —resulting in satisfaction and the greatest economy to the user.

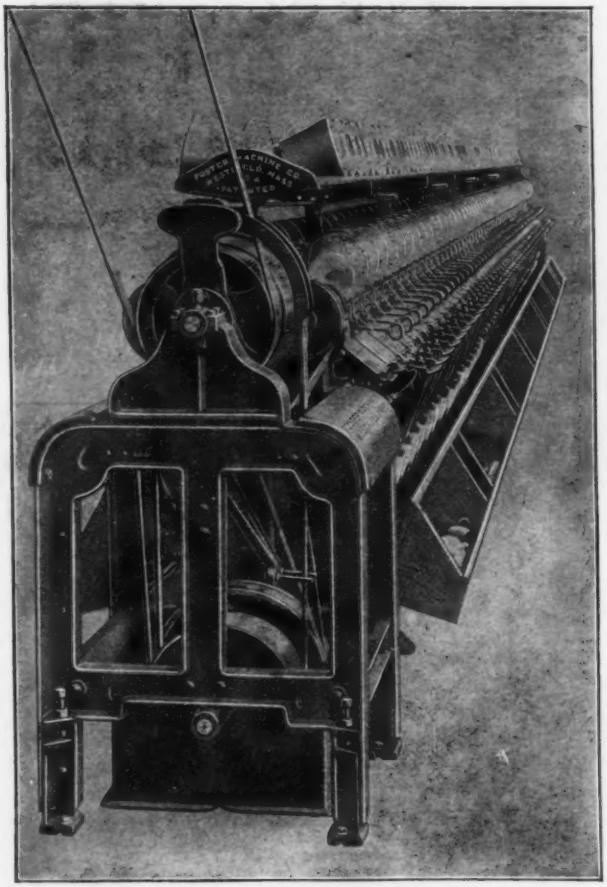
BOSTON BELTING COMPANY

Boston
Chicago
Philadelphia

New York
Cincinnati
Baltimore

Buffalo
Cleveland
Atlanta

New Foster Cone Winder



The newest design Foster Coner winds soft mule spun yarn—the recognized supreme test of a Cone Winder—without ribbon wind chafing and without loss of the yarn's strength or elasticity

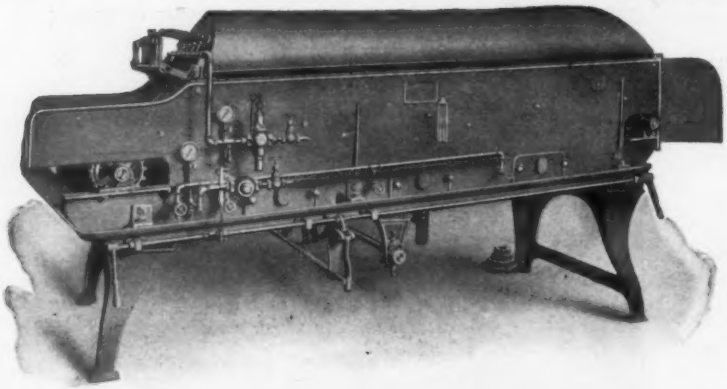
Foster Machine Company

Westfield, Mass.

John Hill, *Southern Agent,* 3rd National Bank Building, Atlanta, Ga.

The Yarn Conditioning Machine

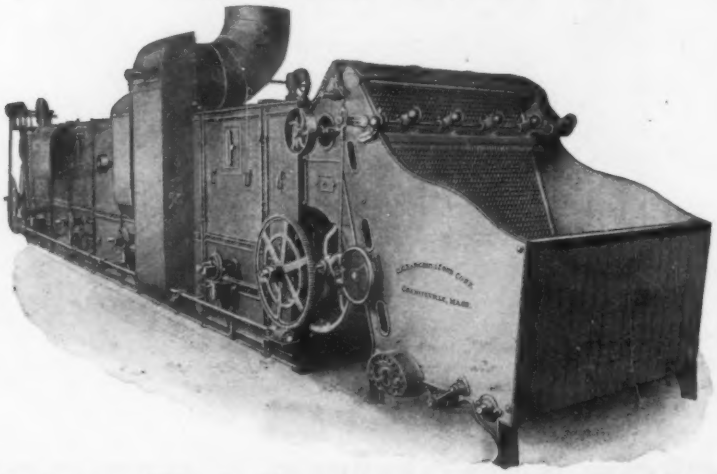
Sets the twist in your filling and overcomes kinky filling difficulties. It conditions without injuring the bobbins



The Sargent Drying Machines

Metal Construction
Asbestos Insulation

Scientifically designed for greatest economy in drying Cotton, Wool, Hair.



Wool Washers, Wool Dusters and Openers, Burr Pickers
Complete Carbonizing Plants
Automatic Feeds for Cotton and Wool

C. G. Sargent's Sons Corp., Graniteville, Mass.

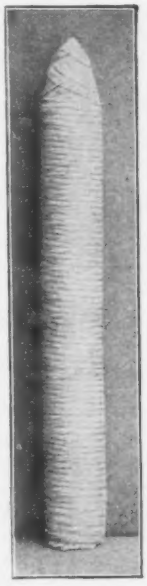
OSWALD LEVER CO., Inc.

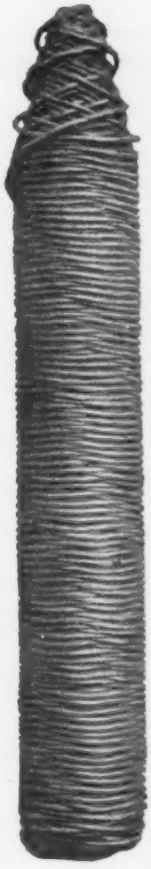
Lehigh Avenue and Front Street

Philadelphia, Pa.

Cops to weave from inside, six inches to seventeen inches and from three-quarter inch to three inches in diameter. Suitable for heavy woolens, chinchilla, felts, linen, jute, paper, grass and cocoa matting.

Shuttle bobbins from six inches to twelve inches long and three quarter inch to two and a half inches in diameter suitable for heavy felt duck, sail and shoe duck, tire fabrics, upholteries, asbestos and all kinds of fine and fancy yarns adapted for automatic and other looms.

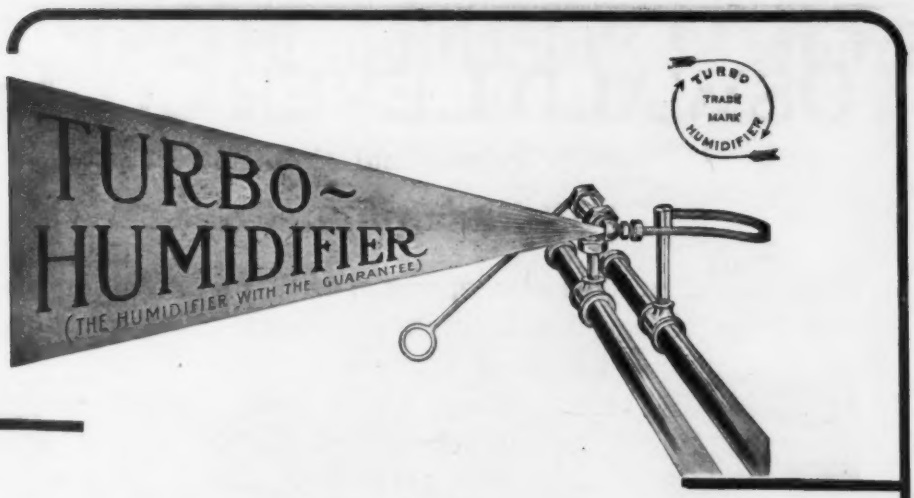




Send yarn and shuttle and let us wind you samples.

Builders of Textile Machinery

Preparatory Lace Machinery and Winders



Your $$ Evaporate

because the fibres of the raw material you buy contain some water which evaporates in storage and while being handled in process of manufacture.

This makes the raw material harder and more expensive to handle—diminishing your output—decreasing your profits.

Hence you should

Put the Evaporated Moisture Back Into the Finished Product

This is the work of the Turbo Humidifier.

As one mill owner says, "The workmanship of the Parks people is nearly perfect. They are so much superior in detail."

Then referring to the Turbo System we installed, he said:

"It has been a revelation to me in the humidifying system. In running all our heads one day here, and a very dry day at that, we found that we raised the humidity in every room from about 30% to over 70% in four hours. I consider that very good work."

The Turbo gives you the necessary humidity always and restores the water.

It increases the quality and quantity of output without increasing operating expenses.

If you want to look into this further just send this advertisement to us attached to your letterhead.

The G. M. Parks Company

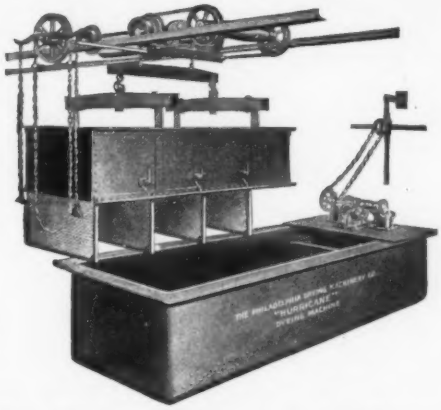
Fitchburg, Mass.

Southern Office, 32 West Trade St., Charlotte, N. C. B. S. Cottrell, Mgr.

FOR DYEING HOSIERY

The Largest Dye Houses in the United States Use "Hurricane" Dyeing Machines

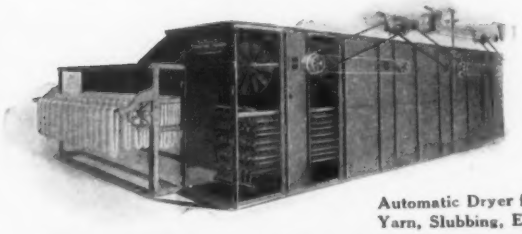
They Save Labor, Dye Stuffs, Steam, and do Superior Dyeing



Also built for Skein Yarn, Slubbing, Braids, etc.

The BEST and Most Economical Dyeing Machine

"Hurricane" Circulating Dyeing Machines are built in various sizes and types

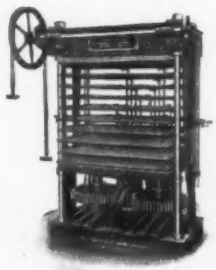


Automatic Dryer for Yarn, Slubbing, Etc.

COMPLETE EQUIPMENTS FOR
DYEING
SCOURING
BLEACHING
CARBONIZING

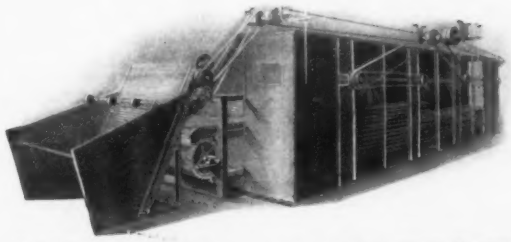
FIRE-PROOF DRYERS

Steel Construction,—Insulated with Asbestos



Power Screw / and Hydraulic { PRESSES

FANS
MOTOR
AND
BELT-DRIVEN



AUTOMATIC STOCK DRYER
(With Sectional-Continuous Conveyor)
For Cotton, Wool, Hair, Rags, Etc.

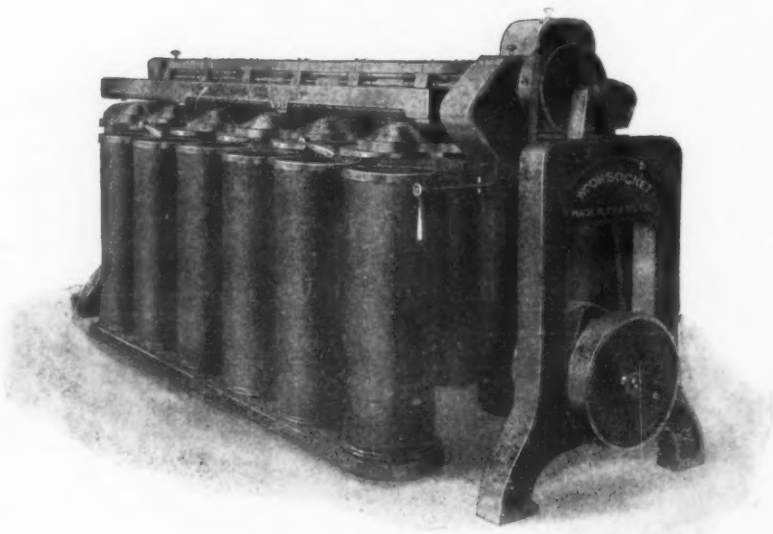
THE PHILADELPHIA DRYING MACHINERY CO.

Main Office and Works:
6721 Germantown Ave., Philadelphia, Pa.

Boston Office:
53 State Street

COTTON MACHINERY BY SPECIALISTS

IMPROVED
DRAWING FRAME



Woonsocket
Machine and Press Company
Woonsocket, R. I.

Sales Agents: { *Southern, J. H. MAYES, Charlotte, N. C.*
Northern, W. C. THRELFALL, Boston, Mass.

THOMAS LEYLAND & CO.

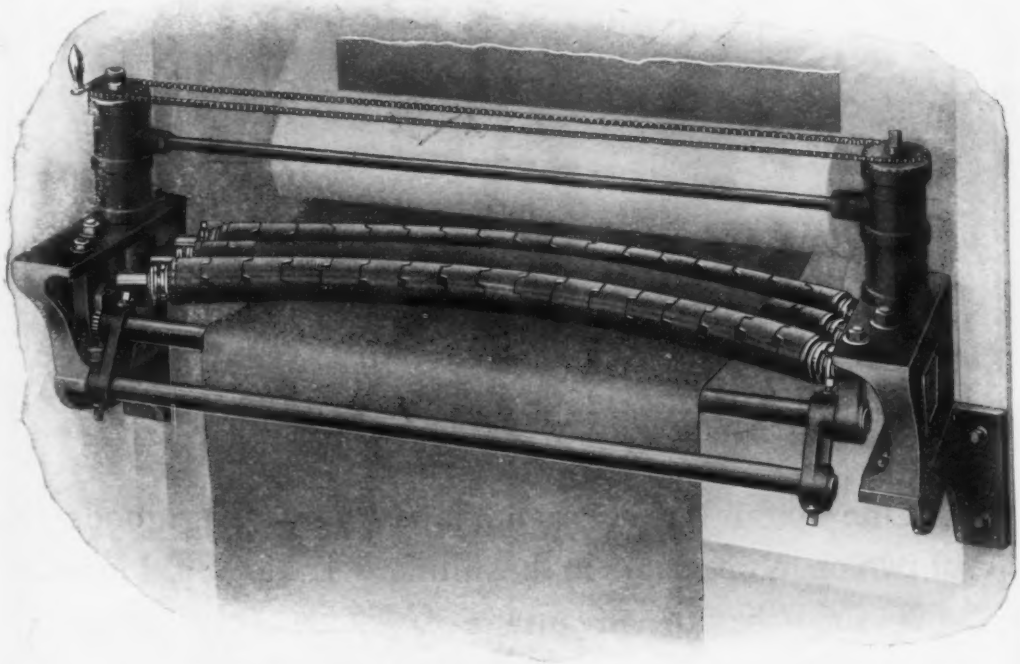
60 India Street, Boston, Mass.

F. T. WALSH, Manager

Sole Manufacturers of THE WILLIAM MYCOCK

Improved Regulating Cloth Expander

PATENTED

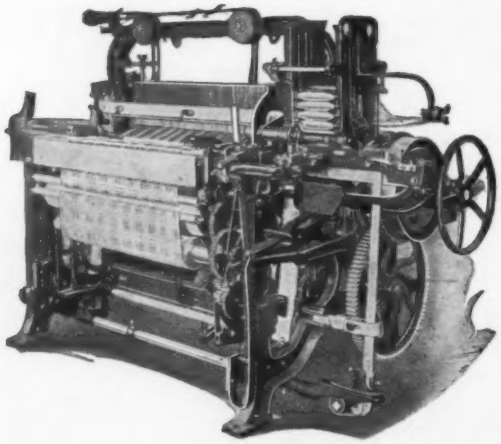


Expander attached to Calendar showing Regulating Motion and Adjustable Tension Bars

Scutchers, Sewing Machines, Open Bleaching Machines, Blanket Washers for Calico Printers, Guides, Etc.

WORKS AT READVILLE, MASS.

Crompton & Knowles Loom Works



Automatic Gingham Looms

One of our latest productions for weaving goods of two or more colors in the filling. Like every loom we build, it has the advantage of a successful mill test.

WORCESTER, MASS.

Providence, R. I. **Philadelphia, Pa.**

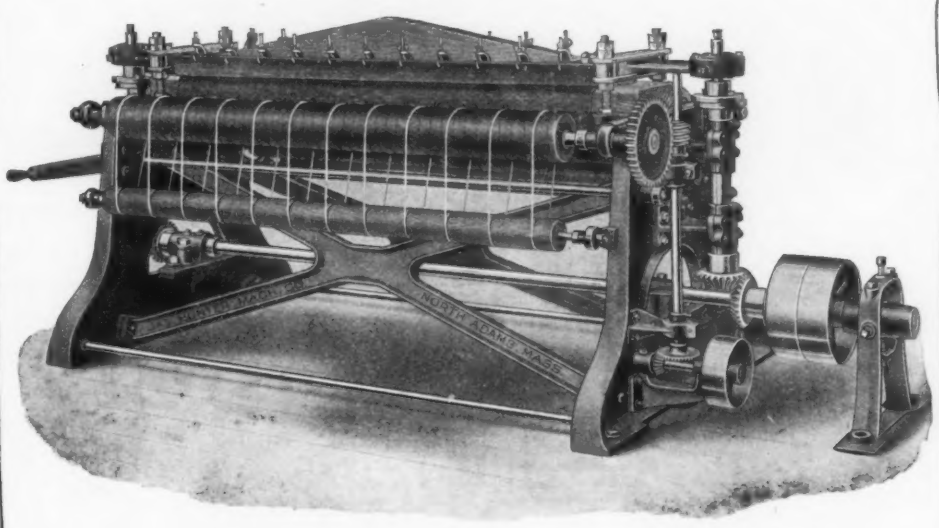
Southern representative, ALEXANDER & GARSED, Charlotte, N. C.

JAMES HUNTER MACHINE CO.

NORTH ADAMS, MASS., U. S. A.

CHINCHILLA MACHINE *Bulletin No. 76*

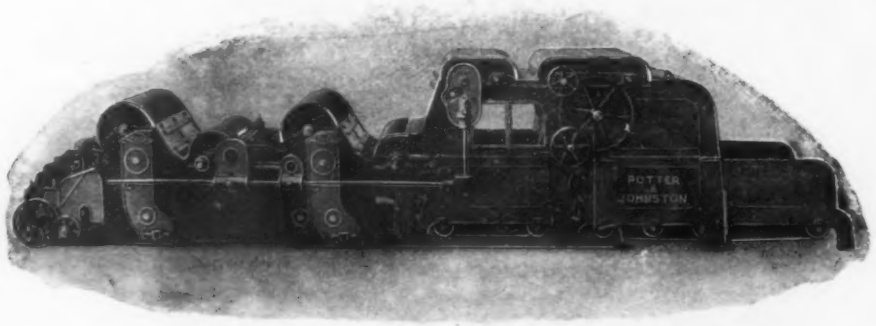
The Hunter CHINCHILLA, NAPPING OR RIPPLING MACHINE



FOR RIPPLING, WAVING OR CURLING THE NAP ON RAISED FABRICS

COTTON MACHINERY BY SPECIALISTS

Picking and Carding Machinery



Breaker Lapper With Double Hopper Feed Regulator

Potter & Johnston

Pawtucket, R. I., U. S. A.

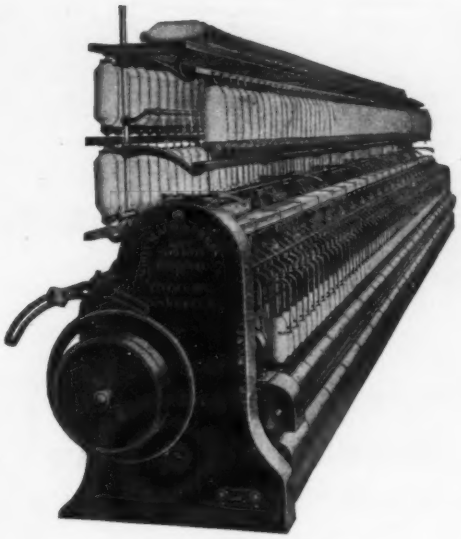
Southern Agent, J. H. MAYES, Charlotte, N. C.
1112 Independence Bldg.

COTTON MACHINERY BY SPECIALISTS

ROVING

AND

DRAWING MACHINERY



IMPROVED ROVING FRAME

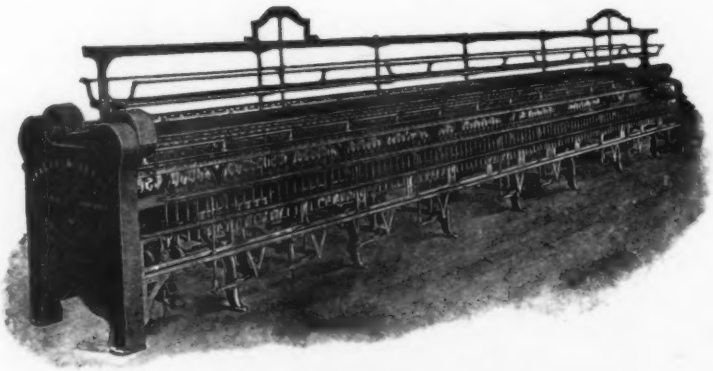
Woonsocket Machine and Press Company

WOONSOCKET, R. I.

Southern Agent, J. H. MAYES, Charlotte, N. C.
1112 Independence Bldg.

COTTON MACHINERY BY SPECIALISTS

Ring Spinning and Twisting Frames



Improved Ring Spinning Frame

Lightest Running Frames
Require Less Power
Less Cost For Upkeep

Have you seen the New Tape Drive?

Fales & Jenks Machine Co.

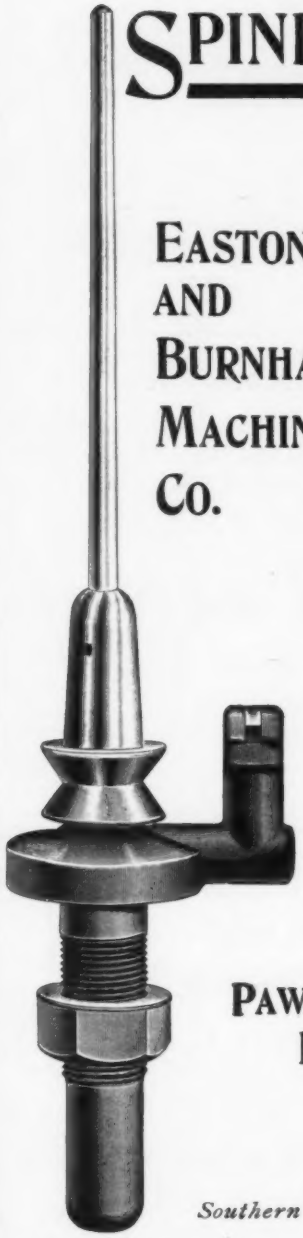
Pawtucket, R. I.

Southern Agent, J. H. MAYES, Charlotte, N. C.
1112 Independence Bldg.

COTTON MACHINERY BY SPECIALISTS

SPINDLES

EASTON AND BURNHAM MACHINE CO.



PAWTUCKET R. I.

T. C. Entwistle Co.

FRANK B. KENNEY, Pres't and Mgr.

Lowell, Mass.

Warping Balling and Beaming Machinery

OF THE

Latest and Most Improved Designs

ALSO ALL KINDS OF

Expansion Combs for Warpers, Beamers and Slashers

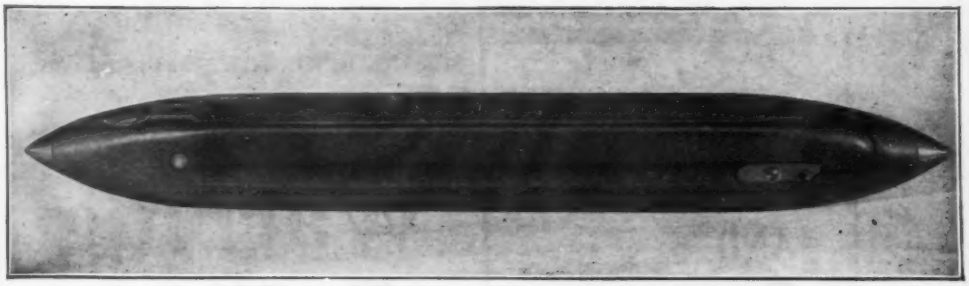
Traverse Wheel and Roll Grinders

FOR ALL MAKES OF COTTON AND WOOLEN CARDS

Southern Agent, J. H. MAYES, Charlotte, N. C.
1112 Independence Bldg.

NEW HAND-THREADING SHUTTLE

PATENTED



The Simplest and Most Quickly Threaded Shuttle

It can be filled with the finest silk or the coarsest filling—won't unthread when the yarn "balloons"—lint that accumulates is easily removed—felt can be inserted for tension purposes—and being a hand threading shuttle, it is sanitary.

Use Never-Slip Cop Spindles and Tubes

And Do Away With All Filling Waste

With this combination we will guarantee that you can run your looms with longer cops and at much higher rate of speed than is otherwise possible.

Never-Slip Cop Tube

Paper Cop Tubes Cones and Shells

Send Your samples and we will quote prices on any lot desired

Shuttles and Shuttle Irons

For All Textile Purposes

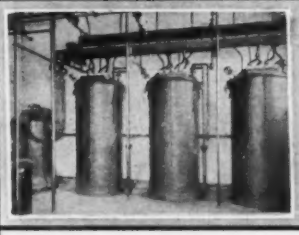
Trial orders solicited—Satisfaction guaranteed

American Textile Specialty Machinery Co.

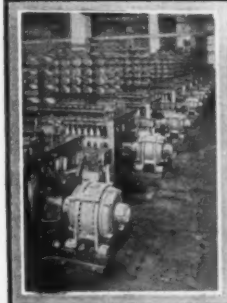
670 Eddy Street - Providence, R. I.

13th St. and Boulevard, Long Island City

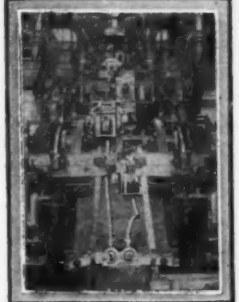
Transformer Room.



Switchboard Room.



Twister Drive.



Loom Drive.

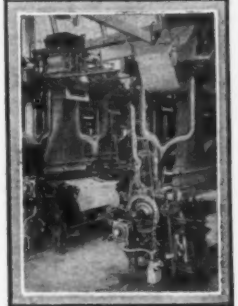
"The Last Word in Textile Mill Construction"

This has been said about the Dunean Mills, Greenville, S. C., which purchased all power equipment from the General Electric Company.

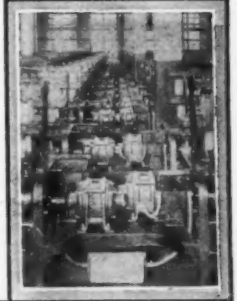
Individual motor driving with G-E textile motors is found in practically all departments. The motors are of a textile type especially designed so as to take care of the varying loads required in textile work. They are dustproof, and have waste-packed bearings as well as taper shafts for the reception of pinions. The Picker and Spinning Frame Motors are equipped with screens and are controlled by oil switches. The Picker Motors are provided with pulleys for belting to pickers and Spinning Frame Motors have steel pinions to mesh with G-E cloth gears on the spinning frames.

Twelve hundred 1/3 h p. 1800 R. P. M. totally enclosed motors are each geared to a loom in the weave shed. Each loom is equipped with a friction clutch and the gear, which forms the friction element of this clutch, meshes with the motor pinion. The loom can be stopped and started as ordinarily, by throwing the lever operating the friction clutch just as is done with a belt driven loom.

The operation of this equipment has been satisfactory in every way.



Jacquard Loom Drive.



Spinning Frame Drive.

General Electric Company

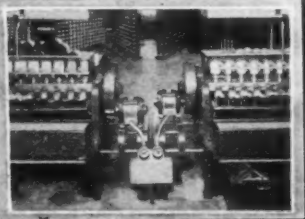
Largest Electrical Manufacturer in the World

General Office: Schenectady, N. Y. District Offices in:

Boston, Mass. New York, N. Y. Philadelphia, Pa. Atlanta, Ga.
Cincinnati, Ohio. Chicago, Ill. Denver, Colo. San Francisco, Cal.

Sales Offices in all Large Cities 3966

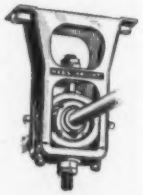
Picker Drive.



Spooler Drive.

BALL ~ BEARINGS

HB DWF



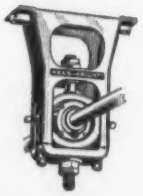
The Hess-Bright Manufacturing Company

Pioneers in the introduction of Annular Ball Bearings

Most extensive resources and plants in existence devoted exclusively to ball bearing manufacture

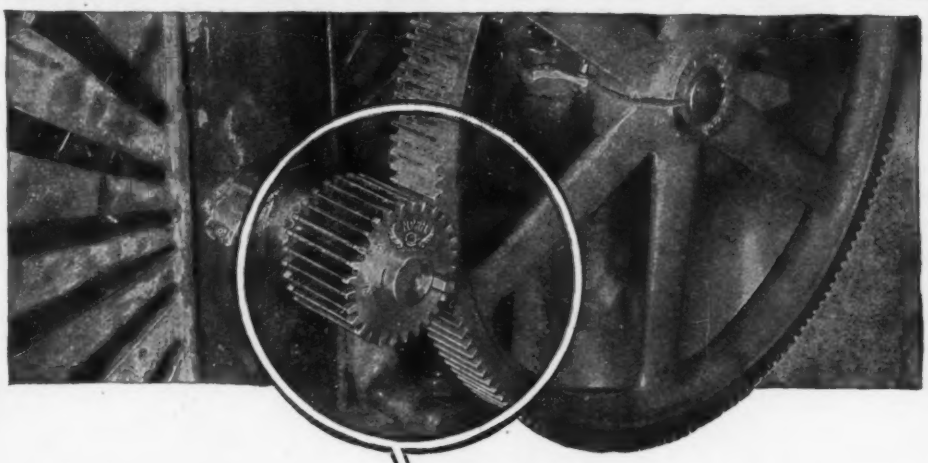
Main Offices and Plant No. 2 on line of Penna. R. R. to New York

No. 27 E. Erie Ave., Philadelphia, Pa.



A Line in Your Plant is a Convincing Argument

PHILADELPHIA	NEW YORK	CHICAGO
666 North Broad Street	1974 Broadway	1800 Michigan Avenue



HERE

is an example of correct high speed drive The pinion of course, is NEW PROCESS strong, quiet, durable and efficient

New Process Noiseless Pinions are made in the light of 25 years of gear manufacturing experience and have been developed to meet every requirement of high speed and quiet, as evidenced by use as standard parts on prominent makes of American machine tools and throughout the shops of leading commercial organizations.

Aside from the mere quieting of noise and the consequent help to operatives, the installation of New Process Pinions offers profitable protection from ruinous gear vibration, and when sudden loads are imposed, the tendency toward stripping of teeth is less and the attendant expense of renewing large gears is greatly reduced.

Tell us when metal-to-metal gearing is making trouble for you, and our engineers will advise if New Process Pinions offer the remedy. Write for our new book, "Noiseless Gear Driving."

NEW PROCESS IS TO ALL OTHER RAWHIDE AS STEEL IS TO IRON

N.P.R.H. **NEW PROCESS GEAR CORPORATION** N.P.R.H.

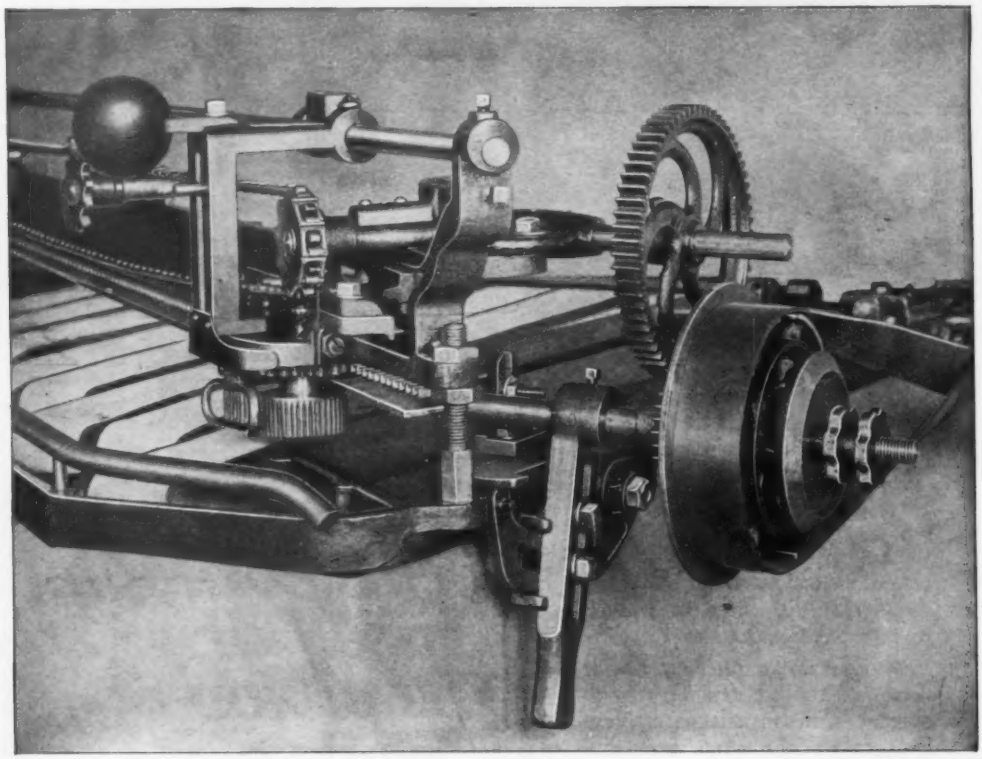
SYRACUSE, N.Y.

Canadian Agents: Robert Gardner & Son, Ltd., Montreal

62

The Geb Patent Tension Controller

FOR APPERLY FEEDS **WILL EXPAND 1½ INCHES**



Patented Nov. 26, 1907; Dec. 20, 1910

An Efficient Device for Changing Speed of Traveller Without Stopping Card or Apperly Feed

We take pleasure in calling the attention of woolen manufacturers and other users of diagonal or intermediate card feeds to the above attachment. The chief advantages are as follows:

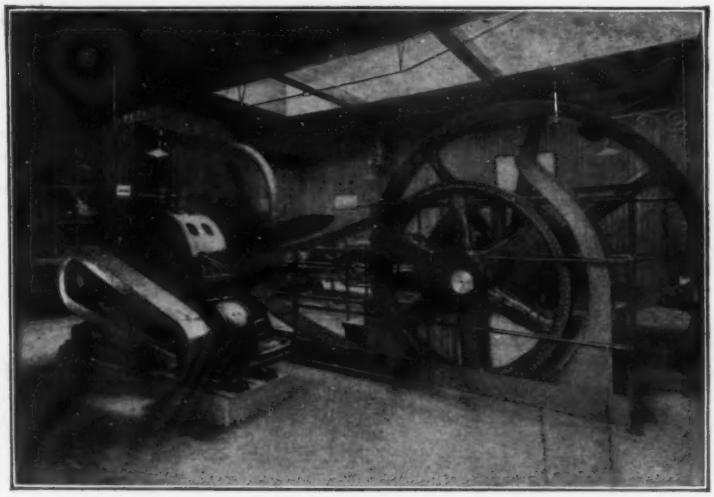
1. NO MORE STOPPING CARD to adjust traveller speed.
2. NO MORE BOTHER, INCONVENIENCE AND DELAY in putting laggings of leather, yarn or twine on the traveller pulley or taking them off.
3. INCREASE OF PRODUCTION by reason of the cards running continuously. The tension on the drawing or sliver can be KEPT RIGHT and therefore the drawing will break seldom or never, and if it does break it will take much less time than heretofore to start and readjust speed.
4. BETTER WORK FROM CARDS. When the tens.on on drawing or sliver is wrong, a bad feed is the result and uneven yarn. With this attachment the tension can be kept just right.
5. REDUCTION IN WASTE. Wrong tension, causing breaking of sliver, or bad feeds, makes waste. This is eliminated.

Practically without exception the manufacturers who have tried this device have unqualifiedly approved same. We have never seen such a unanimous lot of testimonials about a new thing. We believe that it meets a long-felt want and that it will soon be universally recognized as indispensable.

The attachment consists of an expanding pulley permitting a change of 1½ inches in diameter by simply turning a hand wheel or nut without stopping feed, and of a specially constructed bracket which will fit easily on any intermediate feed and allows a change in the position of the pulley to take up slack in belt (or the opposite), caused by change in diameter of pulley. All the parts are substantially made and the pulley is provided with a flange to keep belt from slipping off.

We solicit your order to equip your APPERLY feeds with this attachment. It will pay for itself many times over in a short time.

GEO. S. HARWOOD & SON, 53 State Street, Boston, Mass.



We have in the past months shown you a few of the

SPECIAL APPLICATIONS OF MORSE FLEXIBLE GEARING IN TEXTILE MILL SERVICE

Such as Spinning Frame Drives and Line Shaft Drives

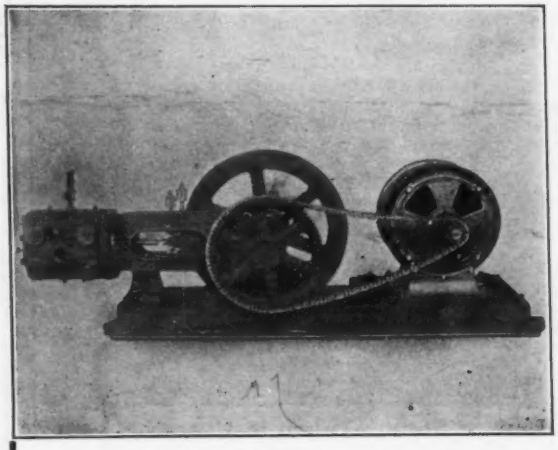
BUT DO NOT

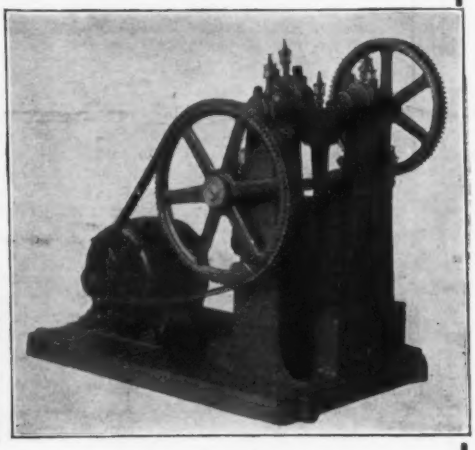
lose sight of the fact that the range of application of this form of power transmission is practically **unlimited.** In many cases **Morse Chains** will give **Better Service** than any other form of drive for running **Pumps, Compressors, Electric Generators, Exciters, Fans, Etc.**

We now have in successful operation drives transmitting an aggregate of over 500,000 H. P. Individual drives running from 1 H. P. to 2000 H. P. each.

Let us figure on some of your power transmission problems.

Our Bulletin No. 9B is particularly interesting.





MORSE CHAIN CO., Ithaca, N. Y.

N. E. BRANCH, 141 MILK STREET, BOSTON

Established Seventeen Hundred Ninety One

One Hundred and Twenty-Third Year

UNDER THE MANAGEMENT OF

J. E. CONANT & CO., (Auctioneers)

OF LOWELL, MASSACHUSETTS

THE business of systematic preparation for absolute auction sales and the thorough and effective advertisement of such sales has become of as much importance in the successful liquidation of large manufacturing properties as has the clearing house system to the national banks.

The danger is more apparent than ever before of leaving the management of the sale of large manufacturing or other properties to the amateur, the layman, or the inexperienced.

For one office to prepare and make the catalogue of a property for sale, for another office to advertise the sale, and for a third office to sell the property means disaster from the start.

The following absolutely necessary for complete success in any sale must, in addition to the dealer and speculator, comprise the actual user, the actual consumer, and the purchaser who buys because of home demand.

A well grounded knowledge of and much familiarity with the property in hand is positively essential to the intelligent handling of the same for sale

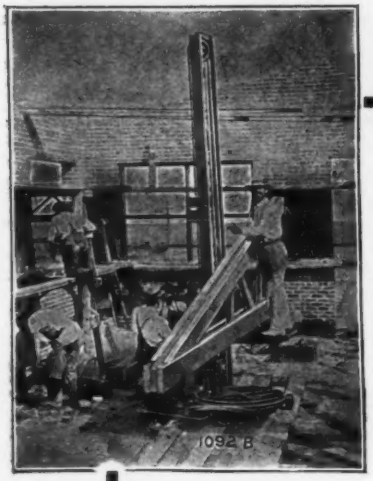
The sale value of many properties is depreciated by indecision as to what to do, dilatory and waiting methods. The time to sell any property is immediately and at once it is for sale, from that moment it commences to grow common and become stale.

Combinations not endured.

Within the last ten or twelve years the management of the sale of some two hundred manufacturing properties situated in seventeen different states of the country has come to hand unsolicited—an experience without precedent.

How a property should be divided, in what order it should be sold, in what manner presented to the public, and who should be notified, are not matters of opinion but purely those of experience.

Entire Transaction—From Start to Finish—Taken in Charge



The illustration at left shows an addition being built in a plant owning a Revolvator. Difficulty was experienced in fixing the roof trusses in place. The superintendent happened to think of the Revolvator. The contractor used it and said he had never before placed trusses in place so easily or rapidly.

Another Use for the Revolvator

WE frequently learn something about the **Revolvator** from its users. The above photograph shows how one ingenious contractor saved considerable time in placing roof trusses on a new addition to a factory where the **Revolvator** was in use. It took six men a day to place the first two trusses, then they hit upon the **Revolvator** idea and on the following day twelve trusses were placed in position. The revolving base feature was a great advantage, as the machine could be swung around and the trusses adjusted to a nicety.

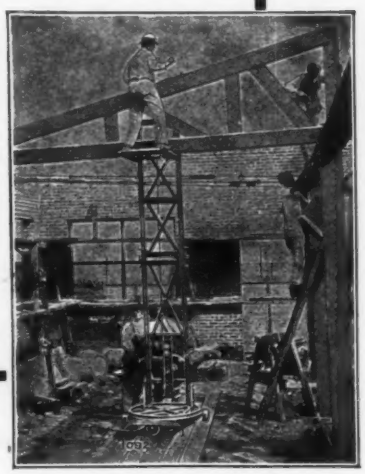
If a contractor finds the **Revolvator** useful in placing heavy trusses in position, don't you think it would be a big advantage in your store room for compactly tiering bales, boxes, barrels, etc.?

If you want to find out how a **Revolvator** increases the capacity of store rooms, and enables two men to do the work formerly requiring seven, write today for a copy of our Bulletin, W, "Scientific Tiering."

N.Y. Revolving Portable Elevator Co.

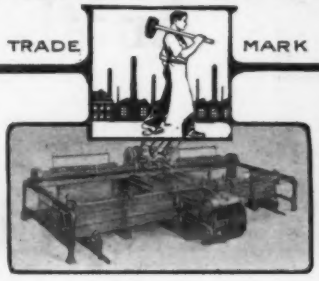
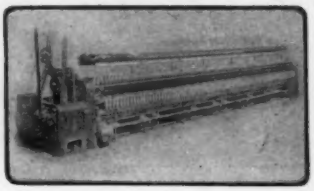
349 Garfield Ave., Jersey City, N.J.

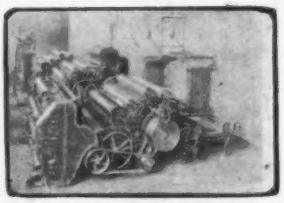
30-B



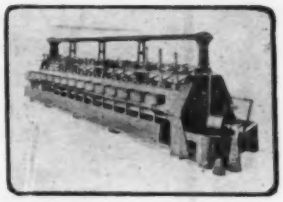
In illustration at right, note how the awkward, eccentric load was handled without any danger of the Revolvator tipping over. The advantage of the revolving base is here admirably illustrated. The trusses had to be elevated lengthwise of the building and then swung around into place.

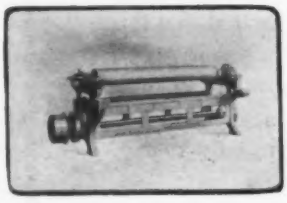
SÆCHSISCHE MASCHINENFABRIK
RICHARD HARTMANN
CHEMNITZ TRADE MARK GERMANY

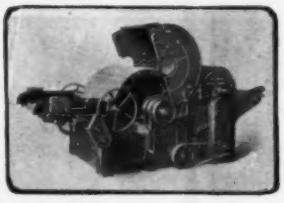


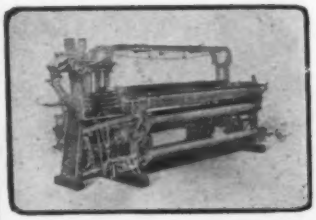
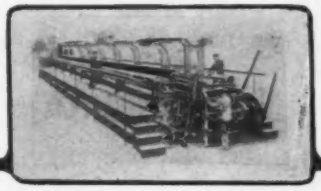
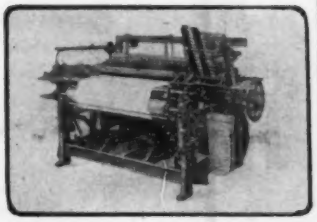
Complete Line
of
Cotton Waste
Machinery





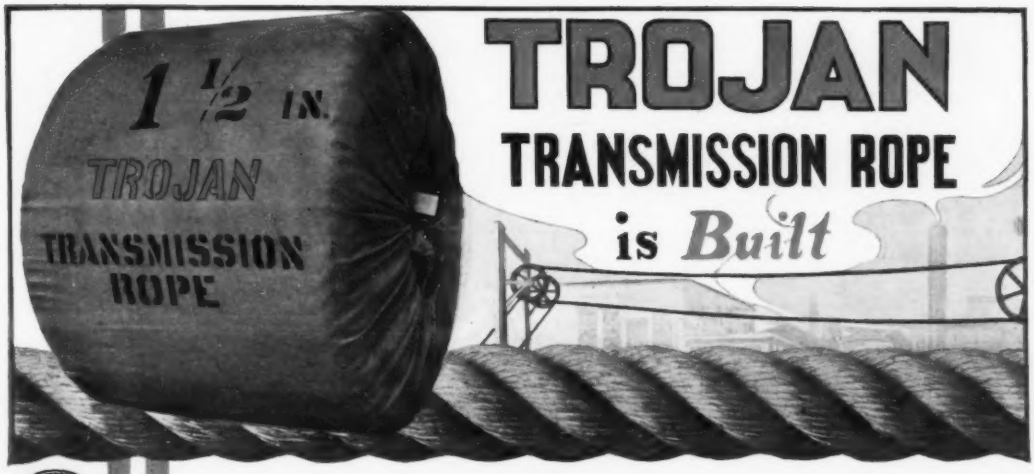
"HARTMANN"
MACHINES
are the
STANDARD
for the
GERMAN WASTE
INDUSTRY



AMERICAN REPRESENTATIVE:

EUGENE SZEPESI, TEXTILE ENGINEER 570 JOHN HANCOCK BUILDING 200 Devonshire St., Boston



TROJAN
TRANSMISSION ROPE
is *Built*

¶ There's as much difference between using ordinary transmission rope and Trojan as there is between wearing a ready-made suit and one made to your measure. Trojan Transmission is planned in every detail for wear and strength. With all conditions and requirements in front of us we have taken them one by one and met them by constructional care.

¶ Tensile strain—crushing—torsion—friction—all of these features enter into transmission rope wear—they are all taken care of in the planning and manufacture of Trojan Transmission Rope.

¶ There is the straightaway strain on the rope from pulley to pulley—the wrench of the outer fibres farthest from the sheaves as the rope is carried around corners or curves—these things call for dependable tensile strength —Trojan strength.

¶ There's the crush of the fibres nearest the pulley at corners and curves—the extreme fineness and pliability of the fibres of Trojan Transmission Rope takes care of this.

¶ Then there's the twist of the rope in the running—torsion—we've taken care of that in the quality of the fibre and in the care in the making.

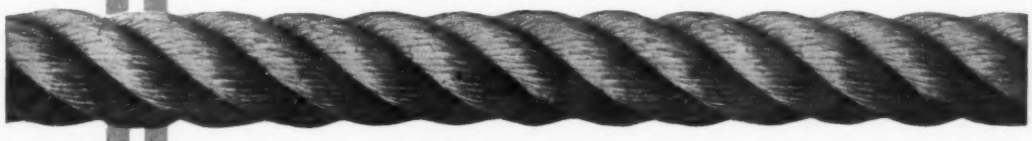
¶ Friction—not alone the rope against the pulley but the internal friction of fibre against fibre and of the strands against each other and the core—all this is reduced to a negligible minimum by our *internal* lubrication. That's why

TROJAN TRANSMISSION

—indoors, outdoors, in all kinds of weather and under all tests wears best—lasts longest —and gives the maximum of power efficiency every day it is in use. Made of the best selected Manila hemp—only. Treated with our special preservative compound. Inspected for defects—tested for tensile strength—core treated with lubricant which works its way throughout the entire rope—every fibre. Requires *no* other lubrication during its whole life.

More About Trojan In Our Free Book

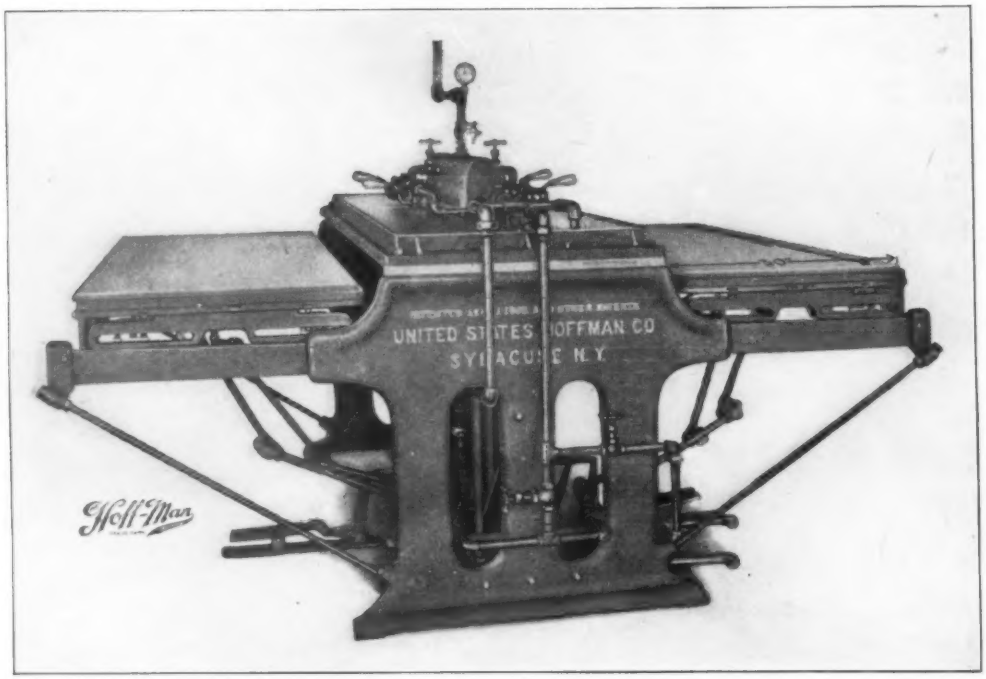
"Trojan Transmission" which treats untechnically of rope transmission and Trojan. Write us fully about your problems—for prices, information, anything that will help—we'll answer freely.



We Ship Without Delay—on Telegram if Necessary.

ST. LOUIS CORDAGE MILLS, St. Louis, Mo.

SEE THIS PRESS AT THE PHILADELPHIA CONVENTION



The "HOFFMAN" "FFF" Knit Goods Press

Especially built for pressing underwear, hosiery, sweaters, bathing suits and sporting goods.

With this press you can give balbriggans a hard flat finish, or on cotton ribs, fleeces, plush backs and woolen garments, you can give the high and lofty appearance and feel demanded by the trade.

This press is simple and economical to operate and is used by large and small manufacturers at home and abroad.

United States Hoffman Co., Syracuse, N. Y.

Philadelphia Convention, Booth 78

Pres. Wilson Says:

"Nothing is done in this country today,
as it was done twenty years ago."

Mr. Manufacturer:

Are you now ready to accept the bicycle, telephone, phonograph, typewriter, aniline dyes, electric lights, gas engines, aeroplanes, submarines, concrete construction, etc., *as being up-to-date?*

Of Course You Are

Just as manufacturers, generally speaking, finally accepted the modern improvements in automatic looms, and in roving and in carding—

And This

Which Puts

15%

to

40%

More Roving on the Bobbin

Which Means

Less Doffing
Less Piecings
Less Waste
Less Labor

with

Better Quality

Dunn Flyer Company, Boston, Mass.

Over Four Hundred

Is Our Average Sales

Send for our new catalog on Humidifying,
Ventilating and Heating Specialties
JUST OFF THE PRESS
Contains a full list of our appliances

We install ALL

Moistening, Ventilating

Our Engineers are prepared to
Expert Attention, and can be
System BEST SUITED TO

Automatic Humidity and

American Moist

Correspondence Solicited

Southern Representatives:

JOHN HILL
J. F. PORTER } **510 Third National Bank Building, ATLANTA, GA.**

Humidifiers Per Month

For This Year

The large number of repeat orders which we are receiving continuously is the best endorsement of the efficiency of our system.

Standard Types of

and Heating Systems

give your problems Unprejudiced
depended upon to recommend the
YOUR PARTICULAR NEEDS

Thermostatic Control Systems

ening Company

Boston, Mass., U. S. A.

WILLIAM FIRTH, President
FRANK B. COMINS, Vice-President and Treasurer

The Greatest Improvement Made in Spinning in 25 Years

The Richards-Hinds Roll

GUARANTEED CLAIMS

Cockley Yarn Preventor
based on actual facts.

Extra Strength of Yarn
demonstrated by actual tests.

Less Waste
with better spin.

Greater Production with Improved Product
greater lineal speed per minute can be maintained.

Less Change of Settings
thus saving considerable time.

Reduced Cost for Spinning
on account of the better running of the work the spinners are enabled to run from 10 to 20% more spindles.

One-Third Saved on Leather Covered Rolls
this will mean a yearly saving of at least 5 cents per spindle or 10 cents per roll.

Better Spinning
substantiated by actual experiment.

We also build our line of **METALLIC ROLLS**

especially adapted to cotton carding room machinery, and applied to the following machines

SLIVER LAPS
RIBBON LAPS
COMBER DRAW BOXES
DETACHING ROLLS
RAILWAY HEADS
DRAWING FRAMES
SLUBBERS AND INTERMEDIATE ROVING

25 to 33% more product guaranteed *Weights reduced from 33 to 50%*

THE METALLIC DRAWING ROLL COMPANY

INCORPORATED 1890

Indian Orchard, Mass.

SEE EXHIBIT

FIG. 27

Lane Truck
Made with or without Duck Partition.

FIG. 20.

Oblong Style
Made regularly with Renewable Hardwood Shoes. Or with iron shoes where work is light.

LANE CANVAS MILL BASKETS BOXES AND TRUCKS

AT ANNUAL CONVENTION OF
HOSIERY AND UNDERWEAR MANUFACTURERS
FIRST REGIMENT ARMORY
PHILADELPHIA, PA., MAY 5TH TO 9TH. (INCLUSIVE)

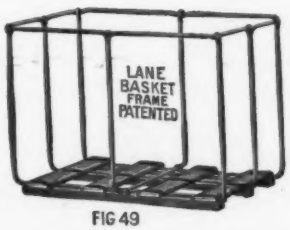


FIG 49

Lane Basket Frame
Round spring steel. Uprights fastened to hoop by *Flexible Eye-joints.* Guaranteed against breakage. Withstands roughest handling.

"A Style for Every Use"

W. T. LANE & BRO.

Manufacturers

POUGHKEEPSIE
N. Y.

FIG. 22.

Round Taper Style

Cramer System
of
Air Conditioning

Cramer "High Duty" Air Conditioner

Cramer Automatic Regulator

FACTS

In several large mills equipped with humidifiers of other makes, we have entirely reorganized their system, installing our "High Duty" equipment with automatic humidity and temperature control and the average improvement during the succeeding twelve months test is:

A—Seconds reduced over 50%.
B—Production uniform day after day (No big jumps.)
C—Actual waste account halved.
D—Large saving in "invisible waste."

What Would Similar Results Be Worth To You?

STUART W. CRAMER

50 Church St. New York — **Charlotte, N. C.** — Tremont Bldg. Boston, Mass.

No. 2 Clipper Complete 19 Lbs. Boxed $15

Clipper Belt Lacer Hooks

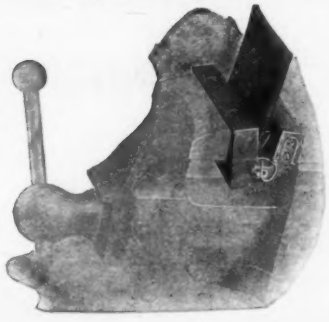
Do not weaken the belt.
Do not cut the fiber.
See how well they set in.

A Slipless—Jumpless—Even Joint

We now take one of the raw hide pins shown here.

With this pin we make a perfectly hinged joint
LIKE THIS

The Same Quality of Work Is Done With This "Baby" Clipper $3.50



Cut This Coupon

Send It Now—And Get Cost Cutting Facts Free

CLIPPER BELT LACER COMPANY
(Successors to J. B. Stone Company)
1010 Front Avenue Grand Rapids, Mich.

Yes—
"Values Are Relative"

You need, perhaps use, some belt lacer, hence the selection of one depends on its relative value, and comparisons are interesting.

"*The Clipper*" No. 2 weighs only 19 pounds boxed, while machines of equal efficiency weigh over 100 pounds.

Therefore it is portable and can be used in any part of your mill.

"*The Clipper*" costs only $3.50 up to $15 according to size, while equally efficient machines cost $50 to $100, and more.

"*The Clipper*" is therefore less expensive—so much so that some plants have several "*Clippers*" for different departments—one we recall has 16 in use.

You, in your mill, could use at least one to advantage—and profit.

Cost Cutting
With the "Clipper"
TRADE MARK

It saves money, because it saves belt repairing time; prevents long delays; enables you to use short ends of belts that would otherwise go to waste.

12,000 of them are giving satisfaction.

Our selling plan protects you.

If not satisfactory you get your money back.

See your mill supply house or write direct.

Ask for catalogue.

CLIPPER BELT LACER CO., 1010 Front Ave., Grand Rapids, Mich.

Gentlemen:—Without obligating me, please send details of free trial offer, and a sample joint made with the "**Clipper**," also name of nearest dealer.

Name _____

Address _____

_____

T.W.R.

BORNE, SCRYMSER COMPANY

ESTABLISHED IN 1874

Oils and Greases

For Textile Machinery

Oils for Wool Batching

Cylinder Oils
Air Compressor Oils
Loom Oils
Engine Oils

Spindle Oils **Dynamo Oils**

Main Office:

No. 80 South Street, New York

BOSTON **FALL RIVER** **PHILADELPHIA**

Works at

CLAREMONT, JERSEY CITY, N. J.

Starch

THE particular case of your own mill needs careful study to determine what starch is best suited to *your* SIZING and FINISHING problems.

We have reduced the manufacture of starches for textile work to a science by years of factory investigation and laboratory research. We are ready to take up the special case of your mill and point out to you what starches are most adaptable and reliable for your purposes.

Six years of careful investigation of conditions in the cotton mills of the country has taught us the needs of the trade.

Six years' research in the best equipped Starch Laboratory in America has put us in touch with starch chemistry.

Six years of manufacturing, with cotton mill problems in mind, has produced our special Brands of Textile Starches.

We want to send our special starch expert to your mill. We want him to go into the matter of sizing with your boss of slashing—check up your sizing processes—find out whether you are now using the starches that will insure you the most efficient and economical results.

This special starch expert service is absolutely free—send us a sample of the starches you are using. We will give you an exact analysis of them and send our practical man to study your needs. Write a letter now to our Mill Starch Department.

Corn Products Refining Company
NEW YORK

Starch

F. P. SHELDON, Pres. J. B. BARRETT, Agent H. EARLE KIMBALL, Treas.

Franklin Process Co.

290 Promenade St.
Providence, R. I.

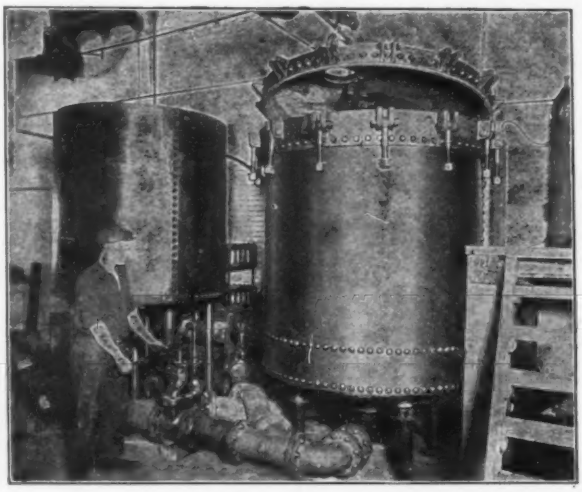
Southern Office
Atlanta Equipment Co., Atlanta, Ga.

YARN DYERS AND DYEING MACHINERY

Most Direct Method of Dyeing Yarns in Existence

Complete Dyeing Equipments Installed in Textile Mills

No Steam in the Dye House



Saves Time Waste Steam Labor Dyes and Therefore Money

1000-pound Franklin Process Dyeing Machine (Ptd.)

FPCo

Machines Furnished With Capacity of 25 to 1000 lbs. to a Batch Guaranteed

Three Batches Per Day (10 Hours)
One-fourth Floor Space Required

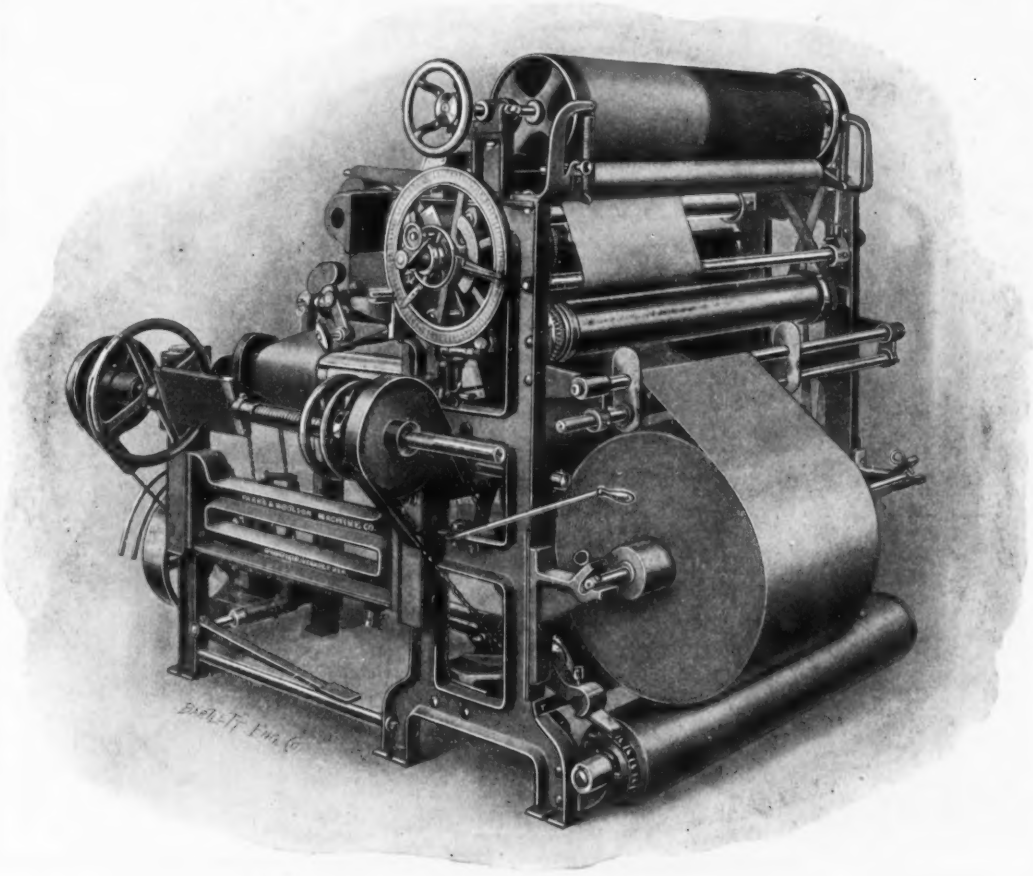
Franklin Tube (Ptd.) Ready for Creel and Quiller

Sampling Easy and Shade-Matching Sure Perfect Bleaching in Our Machine

Anyone Interested We Shall Be Pleased To Show Through Our Job Dyeing Plant At Providence, R. I.

THE NEW CHINAMAN

FOR PACKAGING COTTONS



The Only Automatic
Yardage Packager

Cotton Mills,
Converters and
Packagers will soon
save its cost
in time reduced

Trademarks
Yardnumbers
Measures
Doubles
Winds

Parks & Woolson Machine Co
Springfield Vermont

Who Wants It?

A Whole Half-Pound Stick of Stephenson Bar Belt Dressing

FREE — TO TEXTILE WORLD RECORD READERS

Economical—Efficient—Satisfactory

Don't send us a cent of money, now or later. Give us your name and address and we'll send you *free of charge* exactly what you see in this picture—

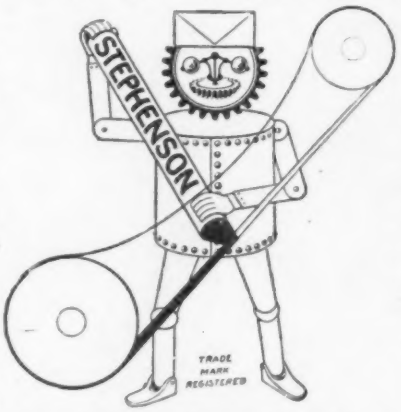
A whole half-pound stick of Stephenson Bar Belt Dressing—the finest belt dressing made

Hundreds will write for *their* sticks and *you* want to be one of them.

A single test with the stick we send you will open your eyes. You'll up and say, *"That's some dressing, believe me!"*

The instant you touch the stick to the belt you'll notice the result. No waiting. And you can always grab up a stick, dressing at the first indication of slipping—apply it at full speed too, something you can't do in a year of Sundays with liquid dressing.

It makes no difference whether you are a convert to the sloppy can—in fact so much the better. Send us your name and address now and learn what a *real* dressing is—a wasteless, always ready, never-fail dressing. And wouldn't you like to show your employer a saving of 30% in oils and greases besides a saving of 10% in belt expense?



A word from you and the half-pound stick is yours—*free*—if you mention the Textile World Record.

FOR SALE BY ALL RELIABLE DEALERS

STEPHENSON MANUFACTURING COMPANY, ALBANY, N.Y.

SMITH, DRUM & CO.

"BUILDERS OF THE BEST"

Labor Saving Machinery for Dyeing, Singeing and Finishing

HOSIERY

IN SULPHUR, ANILINE, DEVELOPED BLACKS AND COLORS
POWER SCREW PRESSES and MERCERIZING MACHINES

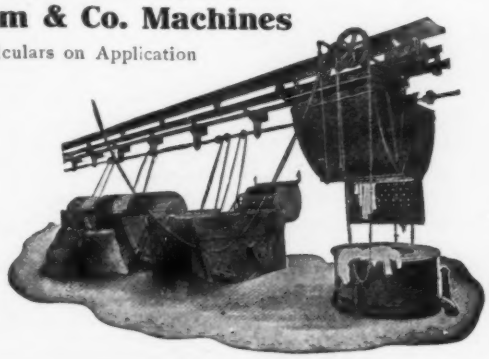
SAVE LABOR and **DYE STUFF** and do **BETTER WORK**
in your dye house by using

Smith, Drum & Co. Machines

Full Particulars on Application

Coral and
Cumberland Streets,
Philadelphia,
Pa.

Southern Agent
H. G. MAYER
Realty Bldg.,
CHARLOTTE, N. C.



LAWSONS

Hope Foundry, LEEDS, England

BRANCH OF

Fairbairn Lawson Combe Barbour, Ltd.

MAKERS OF MACHINERY FOR

Preparing and Spinning

Flax, Hemp, Tow and Jute

Special Machinery
for the Manufacture of
Twines, Rope Yarns and Binder Twine

Good's Combined Hackling and Spreading Machine.

Long Reach Screw-Gill Drawing Frames. Chain-Gill Drawing Frames with Apron Heads.

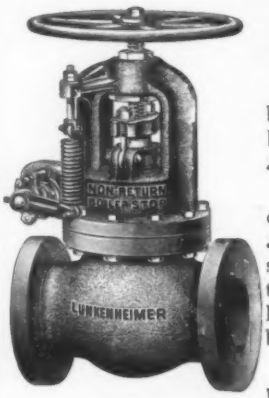
Patent High-Speed Horizontal and Automatic Spinning Frames for Manila.

Improved Laying Machines.

Haskell-Dawes Tubing Twisters.

Brownell's Patent Twisting and Laying Machines for Twine.

N. B.—Complete Plans and Estimates for Flax, Tow, Hemp and Jute Mills, Trawl Twine Factories and Steam Ropeworks.



LUNKENHEIMER NON-RETURN SAFETY BOILER STOP VALVES

In any steam plant where two or more boilers are installed in battery, the outlet from each boiler where same is connected to the header, should be provided with a **Lunkenheimer Non-Return Safety Boiler Stop Valve.**

Should the pressure in one of the boilers suddenly decrease, caused by an accident, a **Lunkenheimer Non-Return Safety Boiler Stop Valve** is guaranteed to close immediately and prevent the steam from the other boilers of the battery entering and discharging through the disabled one. Danger to life and property is greatly lessened, and as the plant can be operated with the other boiler, or boilers, without interference, considerable time and money are saved.

Chattering of the disc, caused by the fluctuation of the steam pressure is prevented by an ingenious outside spring arrangement.

Lunkenheimer Non-return Safety Boiler Stop Valves are exceptionally strong, durable and reliable. All parts subjected to wear are renewable. Made in five different combinations of material to suit the requirements of various conditions of superheat and high pressure, and to meet the specifications of engineers who may differ as to what is best suited to the purpose.

"MOST supply houses sell them--yours CAN--if they DONT or WONT--tell US"

Write for catalogue

THE LUNKENHEIMER COMPANY

Largest Manufacturers of High Grade Engineering Specialties in the World

General Offices and Works: CINCINNATI, OHIO, U. S. A.

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JAMES SPEED HARRY STEPHENSON

SPEED & STEPHENSON

170 Summer Street, Boston, Mass.

Sole Agents in the United States and Canada for

J. B. FARRAR & SONS, **HALIFAX, ENGLAND.**

WORSTED MACHINERY

Including Gill Boxes, Drawing, Roving, Spinning, Twisting and Yarn Finishing Machinery

JOHN DAWSON, LTD.
Wool Washing and Carbonizing Machines.

JAMES SMITH & SON
Improved Noble Combs and Ball Winders.

DAVID SOWDEN & SONS
Looms for Men's Wear, Dress Goods, Linings, etc. Improved Dobbys & Jacquard Machines.

WILSON & CO., BARNSLEY, LTD.
High Class Mill Bobbins.

THOMAS BLACKBURN
Spindle Bands and Tape.

JOHN HETHERINGTON & SONS, LTD.
Improved Worsted Cards and Mules, Duplex Woolen Cards with Josephy Tape Condensers, to take off up to 240 ends. Improved Woolen Mules, Fearnaughts, etc.

BOLDY & SON, LTD.
Lister Nip Combs. Hot Air Drying Backwashing Machines, Grease Extracting Plants.

HEARL HEATON & SONS
Grinding Tackle and Emery Fillet.

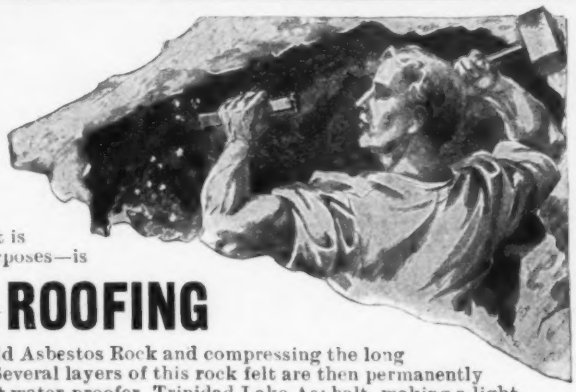
S. HALEY & SONS, LTD.
Card Clothing of Every Description.

SKENE & DEVALLEE, Vigoureux Printing Machines, Washers, etc.

MILL SUPPLIES Roller Leather, Combing Aprons, Bristles, and all Supplies used in a Worsted Mill.

MACHINE SHOP AT LAWRENCE, MASS., For Repairs, Change Gears and Parts.

As Permanent as a Roof Cut Out of Solid Rock



Can you imagine anything more durable than a roof cut out of solid rock! Such a roof would be practically *indestructible*. Fire couldn't burn it. Acid fumes, gases, rain, snow, sun and extreme temperatures couldn't injure it.

A roof of this description—a roof that is cut from solid rock to all intents and purposes—is

J-M ASBESTOS ROOFING

This roofing is made by c rushing solid Asbestos Rock and compressing the long fibres into a dense, homogeneous felt. Several layers of this rock felt are then permanently cemented together with nature's greatest water-proofer, Trinidad Lake Asphalt, making a light-weight roofing that is virtually a *solid sheet of pliable stone*.

J-M Asbestos Roofing forever rids you from the expense of repairs. *No coating. No graveling. Everlasting.* After more than a quarter-century of service J-M Asbestos Roofing shows no signs of deterioration. It is the cheapest of all roofings from the cost-per-year standpoint.

Adapted to any building and any climate. Easily and quickly applied. If your dealer can't supply you, we will ship direct.

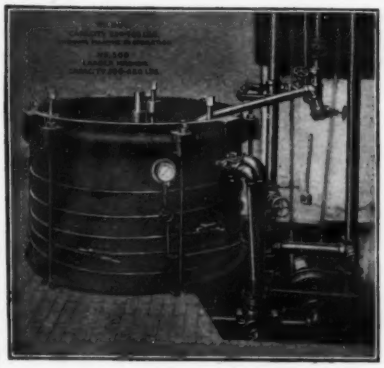
Write our nearest branch for sample of the Asbestos Rock from which this roofing is made and Illustrated Catalog No. 303.

H. W. JOHNS-MANVILLE CO.

Albany Baltimore Boston Buffalo Chicago Cincinnati Cleveland Dallas Detroit Indianapolis Kansas City Los Angeles Louisville Milwaukee Minneapolis New Orleans New York Omaha Philadelphia Pittsburgh San Francisco Seattle St. Louis Syracuse

THE CANADIAN H. W. JOHNS-MANVILLE CO., LIMITED, Toronto Montreal Winnipeg Vancouver

1931



UP TO THE MINUTE

Wool and Worsted Top Dying

IN THE

PSARSKI DYEING MACHINE

PRACTICAL—ECONOMICAL—THOROUGH

UNIFORM COLOR

Dyes Wool and Tops—100 per cent. of Batch—absolutely level color throughout

NO FELTING

The Mass—Dormant While Dyeing—Cannot be Felted. Fibre comes out as Alive—Soft—Elastic and Spinable as it was Before Dyeing

DYES LOOSE WOOL		DYES TOPS	
Acid Colors	2,000 pounds per day	Fine Wool	500 pounds per batch
Top Chromed Colors	1,500 " "	Coarse Wool	800 " "
Bottom Chromed Colors	1,000 " "		

THREE BATCHES PER ELEVEN HOUR DAY

Tops are packed rapidly and easily. No special system or building. Tops are dyed uniform color throughout

NO FELTING—NO RE-COMBING—NO ADDITIONAL NOILS

SAVES 5 TO 10c PER POUND OVER OTHER MACHINES

SAVES 90 PER CENT. STEAM OVER HAND KETTLE OR REVOLVING MACHINES. SAVES DYES—LABOR—WATER

IS SIMPLE—STRONG—COMPACT—DURABLE—PRACTICALLY NEVER NEEDS REPAIRS

THE PSARSKI DYEING MACHINE COMPANY

3167 Fulton Road :: :: :: :: CLEVELAND, OHIO

BAY STATE

Light Your Mill or Factory With

Bay State Brick and Cement Coating

"Lights Like the Sun"

It reflects the light in the darkest rooms and will cut down your lighting bill.

Can be washed and will not chip off when applied over delicate machinery.

Is a fire retarder and when used on wood work lessens the fire risk.

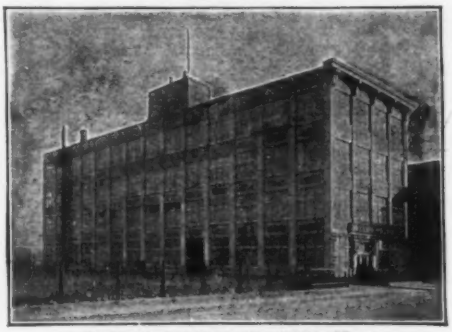
Bears the label of the National Board of Fire Underwriters.

Can be used equally well in the damp or dry rooms of your mill or factory. Is impervious to moisture or fumes.

Ask your dealer for it. If he cannot supply you write us. Drop a postal for Booklet K, that tells you all about Bay State Brick and Cement Coating.

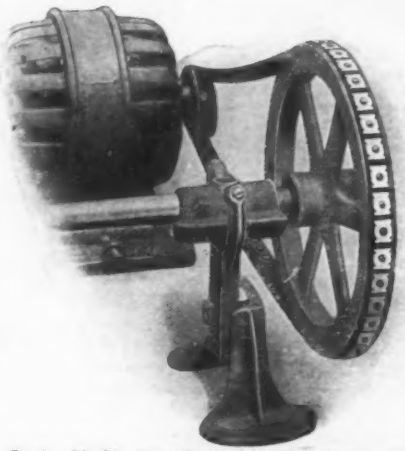
WADSWORTH, HOWLAND & CO., Inc.
Paint and Varnish Makers and Lead Corroders
82-84 Washington Street, Boston, Mass.
New York Office, 156 Fifth Avenue

It was used here



Messrs. Page & Shaw, Cambridge, Mass.
Monks & Johnson, Engineers

Peerless V Silent Chain Drives



Sewing Machine Line Shaft with 2 H. P. Peerless V Belt

Are absolutely noiseless in operation. Can be operated on very close centers. Are not in any way effected by moisture, dust, grit or lint. And owing to the principle of the wedge being fully utilized, slippage is avoided, making a positive drive.

If you are bothered with transmission troubles send for full information and let us solve them for you.

PEERLESS V BELT CO.

NEW YORK **CEDAR RAPIDS, IA.** **CHICAGO**

CANADIAN TEXTILE JOURNAL

Vol. XXX | Toronto, April, 1913 | No. 4

OPPORTUNITY

THE wide awake, industrious and ambitious men who came to the United States during the early part of the 19th century are to-day the captains in the industry of that country.

Many of those started as journeymen, others as salesmen and others again as manufacturers in a small way. But they mostly succeeded because they found there the conditions that go to make what is ordinarily termed OPPORTUNITY. In many cases ambition in the individual was lacking but this was soon created by the new environment and men who, under other conditions, would have been satisfied with less achievement, began to discover that they were capable of bigger things.

This is what most new countries have to offer—OPPORTUNITY—and it requires but a superficial review of history and survey of present conditions to realize that no country has ever supplied in such abundance the conditions that give to this word—OPPORTUNITY—its fullest significance as does Canada at the present time.

Natural resources, means of developing them, transportation and markets are the elements of industrial OPPORTUNITY.

(OVER)

As an indication of the richness and extent of her natural resources it is sufficient to point out that Canada already controls the markets of the world for many important commodities such as asbestos, nickle and cobalt. In others, such as cheese, grain and grain products, pulp and paper and silver she is a dominant factor.

Coal and natural gas she has in abundance, particularly at the Atlantic and Pacific coasts. But her premier motive power is electricity which is being developed and delivered by the state and municipalities to the manufacturers and farmers, cheaper than anywhere else on the continent.

With Europe on the east, Asia on the west and United States on the south, Canada occupies a position as regards proximity to the world's greatest markets unequalled by any new country of either the present or the past. Her natural and artificial highways for transportation are of the best.

These facts are already being appreciated and people from other countries are coming to Canada in large numbers.

When the United States had a population of the size which Canada has at present her annual immigration was less than one in every 4,000 of her population. Canada is now receiving new comers at the rate of one in twenty of her population per year.

After food, textiles is the first need of a people. No matter in what line of enterprise people engage they require clothing—especially in Canada. Hence the textile industry benefits by the development and expansion of all others.

Canada offers OPPORTUNITIES to the wide awake, industrious and ambitious textile operator greater than those to be found anywhere else and anyone interested may be put in touch with them by communicating with the

CANADIAN TEXTILE JOURNAL

Room 243, Confederation Life Bldg., Toronto, Ont.

OR

Room 34-B, Board of Trade Bldg., Montreal, P. Q.

Goulds Centrifugal Pumps

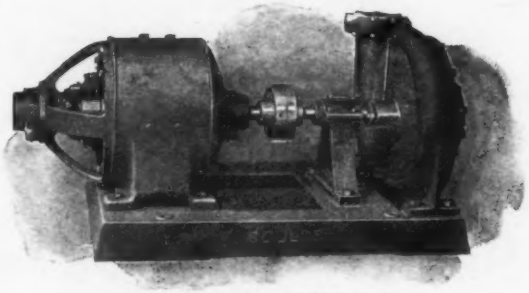


Figure 3004 Connected to Electric Motor.

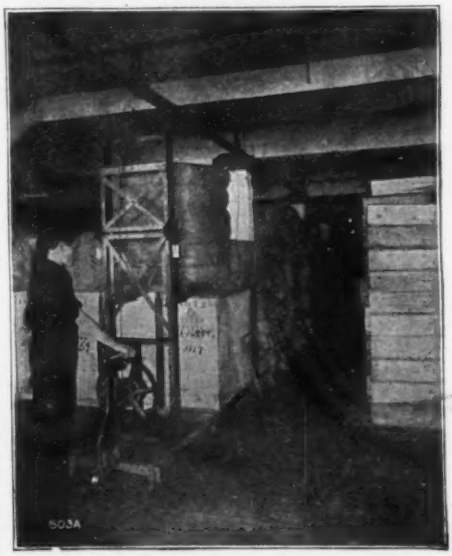
are adaptable for all pumping duties in the textile mill.

Their large open waterways make them especially suitable for pumping size and coloring material.

Ask for bulletins describing our various types of centrifugal pumps for Textile mill service.

THE GOULDS MFG. CO.
LARGEST MFR. OF PUMPS FOR EVERY SERVICE
62 W. FALL STREET - SENECA FALLS, N. Y.
Branches and Agencies in Principal Cities

One Man Can Move and Pile Your Stock



WITHOUT assistance, a single man can handle the heaviest bales or boxes—lift them from floor, platform, or elevator—carry them to any department—pile them to any height with the

ECONOMY·STEEL TIERING·MACHINE

Replace the **four** or **five** men necessary in the old way. Do away with the straining and tugging which wastes time and often injures stock.

FREE ILLUSTRATED BOOKLET describes and illustrates how this machine decreases labor costs and increases storage space. Built in many styles. Write for booklet today.

Economy Engineering Company
415 S. Washtenaw Ave. **Chicago, Ill.**

WM. SELLERS & CO., INCORP'D

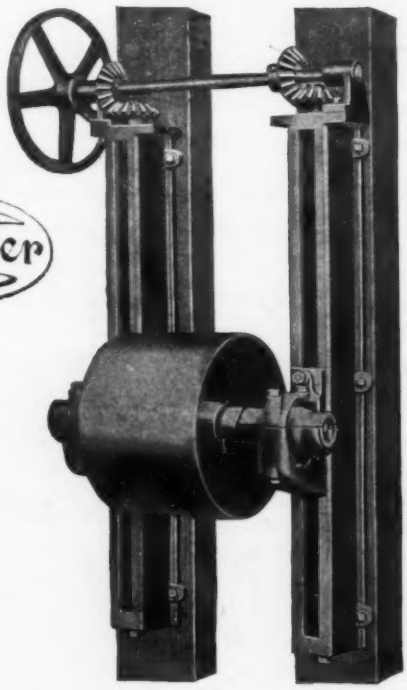
Main Office and Works
1600 Hamilton St., Philadelphia, Pa.
New England Office
79 Milk St., Boston, Mass.

Latest and most approved methods of

POWER TRANSMISSION
by
BELTS, ROPES, OR GEARS

Write for full information

The Hunter



For Any Situation **BELT TIGHTENERS** Made in All Styles

Bearings Adjust Independently or Together

James Hunter Machine Co.
70 KILBY STREET BOSTON, MASS. and NORTH ADAMS MASS.

Send for Tightener Bulletins

Made of the Quality That Lasts

Cresson-Morris Power Transmission Machinery is made to sell to a restricted class—the class that measures cost by the results.

We have had over 50 years' practical experience in connection with the designing, production and installation of Power Transmission Machinery of all sorts and capacities. We have equipped mills, factories and power plants covering almost every known class of trade throughout the world.

If you contemplate installing new work or alterations tending to improve your present equipment, confer with us for ideas, prices, etc.

Cresson-Morris Company

Successors to: Geo. V. Cresson Co.—Morris Engineering Co.

NEW YORK CITY, 90 West Street **PHILADELPHIA, PA.**

There's No Normal Pulley Task an "American" Can't Perform

Where the work is hardest, conditions most unfavorable, where strains and stresses are most frequent, install an

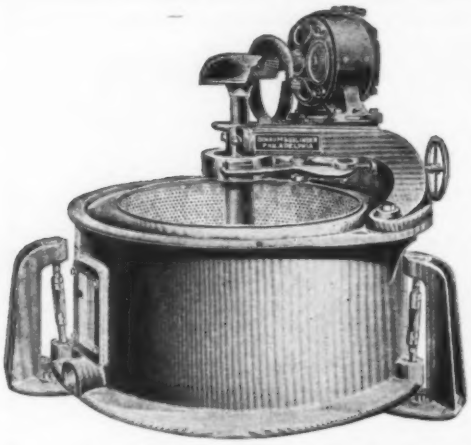
"American" Steel Split Pulley

It is *guaranteed* to give *double belt* service under any conditions not requiring a special pulley.
You will find "American" pulleys stocked in most towns of importance.
Your local supply dealer can meet your wants.
Send for our instructive free booklet which every engineer, millman or machinist should read.

THE AMERICAN PULLEY COMPANY

OFFICE AND WORKS: PHILADELPHIA, PA.

Warehouses: New York, 203 Lafayette St. Boston, 165 Pearl St. Chicago, 124 S. Clinton St.



Over 37 Years' Success Is Your GUARANTEE

that the Schaum & Uhlinger Hydro-Extractor is the centrifugal separator best adapted to *your* business. Textile mills all over the United States, Canada and even Japan are using one or more

Schaum & Uhlinger Hydro-Extractor

The machine shown above is the electrically driven extractor that is becoming so popular, due largely to its compact, direct-connection driving mechanism which enjoys all the advantages of the portable electric motor.

Direct or alternating current, it is easily started, attains full speed in a short time and is quickly stopped by an efficient toggle brake. Self-balancing; no jar or vibration, not even with a revolving 1,000 lb. load.

Made in six sizes and equipped to be ACID-PROOF when so ordered. You should have a copy of our free book on Hydro-Extractors.

Ask for it today—a postcard will do

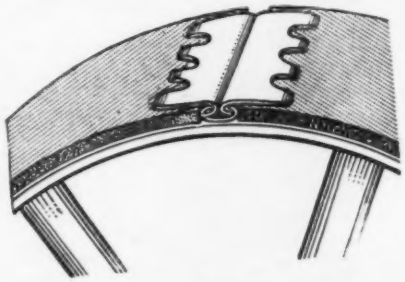
Schaum & Uhlinger, Inc.

204 Glenwood Avenue

Philadelphia, U. S. A.

THE SNAP

Detachable Belt Fastener



Some reasons why you want it:

It is detachable	**It saves time**
It is flexible	**It saves money**
It is safe and strong	**It saves labor**
It is easy to apply	**No tools required but a hammer**

Made for single and double belts. Put up in boxes 24 pieces, at the following prices:

1" per box	$ .24	2½" per box	$ .60
1¼" "	.36	3" "	.72
2" "	.48	3½" "	.84

4" per box $ .96

Sent to you by Parcel Post. Give us a trial order and you will be convinced.

Snap Detachable Belt Fastener Co.

301 Market St., Newark, N. J.

FOR

Positive Spinning

AND

Twisting

OF

COTTON

And Other Betterments

Address the

Brown Spin-Wright Cotton Co.

NOW AT

32 Union Sq., New York, N. Y.

"Pick" Counting
PAYS
Employer and Employee

But DO IT WITH A "Roco"

The cut shows a **Roco** counting picks on a loom. **Rocos** are extensively used for this purpose, as weavers and mill owners, both agree that it is the most reliable and accurate way of figuring the weavers' earnings.

Roco, Elm City and **Bristol** Counters are made in different styles for counting on various machines, e. g., looms balling machines, twisters, dressers, folders, printing and rolling machines, tender frames, warpers, slashers, etc.

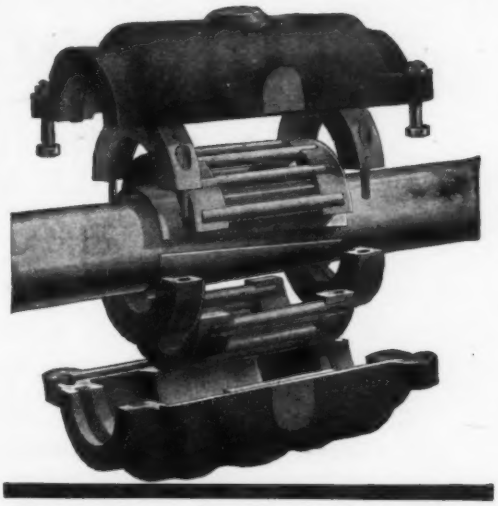
Counters Increase a Mill's Efficiency

By telling capacity of any machine—
By registering exact output in most any desired unit—
By checking over-production and preventing waste of raw material—
By making cost figuring easier—
By preventing waste of time and money.

Many of the largest textile mills, bleacheries and finishing plants are using these counters—and finding that all of this is true.

If You Want Such Help Ask for Catalog No. 18

THE C. J. ROOT CO.
BRISTOL, CONN.



This Is To Show the All Split Feature of the

OLD RELIABLE SELLS

This is one big principle that has made the Sells such a success

FIRST—Note that very important feature *The Split Steel Bushing* on which the roller structure revolves, and which absolutely protects the shaft from the slightest wear.

SECOND—This steel bushing is clamped down with two split collars, which being gripped to the shaft revolve with it about 33% faster than the roller structure, thereby assisting the rollers, instead of retarding them.

THIRD—The rolls are held in steel cages, always run parallel, and are kept the same distance apart, so that there is no wear on the rolls by rubbing against each other.

FOURTH—The split box—Note the large bearing surface and its ample thickness to provide for long wear.

What you are more interested in than any of these mechanical details are the actual demonstrations of saving the Sells has made in actual practice, by reducing the friction load 25 to 50%.

We have letters in our possession from users who explain how they have saved as high as 75% of their friction load.

What would a saving of this kind mean to you? Isn't a bearing that has done all this worth investigating?

It will not obligate you one particle to drop us a line explaining the particular conditions roller bearings would have to overcome in your plant, but we could then give you the specific information you need to be sure you could save as much with these bearings as all these other concerns.

Use a letter, postal—anything—but will you ask for this information now?

Royersford Foundry & Machine Co.
56 N. 5th Street, Phila., Pa.

Manufacturers of Power Transmission Machinery and Punching and Shearing Machines. European Office: Theodore Butler, Ltd., 149 Queen Victoria St., London, E. C.

"ROLLERINE" a high grade lubricant especially compounded for roller and ball bearings.

WM. FIRTH Pres. EDWIN BARNES, Vice-Pres. JOHN H NELSON, Treas.

WILLIAM FIRTH CO.

558-559 John Hancock Bldg., 200 Devonshire St., Boston, Mass.

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ASA LEES & CO., Limited

TEXTILE MACHINERY

OF EVERY DESCRIPTION FOR COTTON, WOOLEN AND WORSTED.

Sole Agents for

JOSEPH STUBBS, Gassing, Winding and Reeling Machinery for Cotton, Worsted and Silk.
GEO. ORME & CO., Patent Hank Indicators, etc.
WILLIAM TATHAM & CO., Waste Machinery.
R. CENTNER FILS, Heddles.
GOODBRAND & CO., Yarn Testing Machinery, Warp Reels, etc.
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BUCKLEY & CROSSLEY, Spindles, Flyer and Pressers, etc.
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BRADFORD STEEL PIN CO., Comber Pins.

Also Agents for

JOSEPH SYKES BROS., Hardened and Tempered Steel Card Clothing for Cotton.
DRONSFIELD BROS., LTD., Emery Wheel Grinders, Emery Fillet and Flat Grinding Machines.
COTTON CORD & VELVET CUTTING MACHINE CO., Corduroy Cutting Machines, etc.

Pick Classes, Leather Aprons, Patent Wire Chain Aprons.

BIRCH COTTON FINISHING MACHINERY

Scutchers	Washing	Sewing
Angular Guides	Dyeing	Singeing
Conical Openers	Squeezing	Mangles
Stretchers	Folders	Engines
Open Soapers	Rollers	Napping

THE BIRCH WOOLEN WORSTED FINISHING MACHINERY

Crabbing	Steam Finishing	Cloth Openers
Piece Dyeing	Steam Blowing	Folders
Singeing	Sewing	Squeezing
Tentering	Tacking	Napping

BIRCH BROTHERS

ALBERT BIRCH, Textile Mechanician

SOMERVILLE MACHINE WORKS, SOMERVILLE, MASS.

RELIANCE CLOTH HANGING MACHINE

For shrinking woolen, worsted and cotton goods; drying oilcloth, or waterproof cloth, and curing rubberized cloth.

Can be attached to any machine or operated separately

In use by the United States Quartermaster department for shrinking uniform cloth.

Write for catalogue and prices

Reliance Machine Works

Frankford, Phila.

WILLIAM FIRTH
Pres.

THE

FRANK B. COMINS
Vice-Pres. and Treas.

American Moistening Company

120 FRANKLIN STREET, BOSTON, MASS.

Received the HIGHEST AWARD on recommendation of the FRANKLIN INSTITUTE for

"SIMPLICITY AND ORIGINALITY OF DESIGN"

Is the largest manufacturer of HUMIDIFIERS in the world. The last twenty years receiving the HIGHEST AWARD in this country and Europe for its AIR-MOISTENING SYSTEM. EIGHT GOLD MEDALS and others.

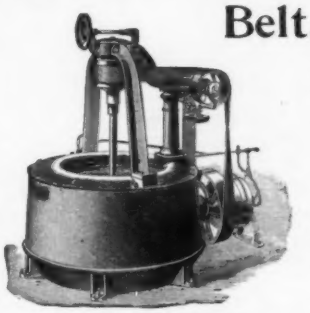
The Only Perfect System of Air Moistening

Has Been Adopted by the Representative Manufacturers of this Country.
The only System adopted in the Textile Schools. Write for booklet "T" on Humidification.
Legal proceedings will at once be taken against infringers and users of infringements.

JOHN HILL, Southern Representative, 510 Third National Bank Building, ATLANTA, GA.

Tolhurst Self Balancing Extractors

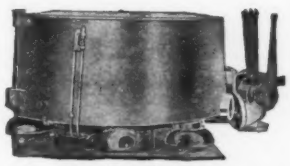
Belt, Engine and Motor Driven



Over Driven Extractor

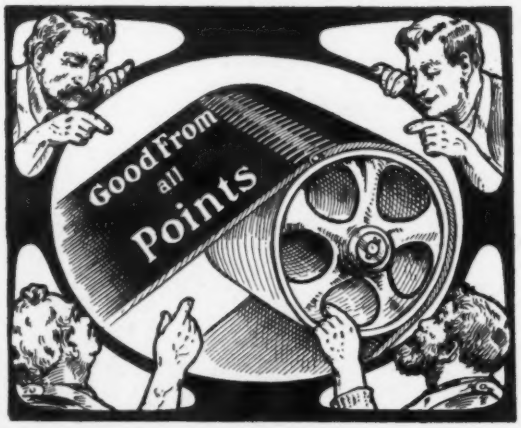
DYE TUBS AND TANKS

Reel Dyeing and Bleaching Machines
Washing Machines



Open Top Extractor

TOLHURST MACHINE WORKS
TROY, N. Y.



You Want to Lace a Belt with a

uniform, strong, flexible joint, one that will not thump on the pulley—**and do it quickly.**

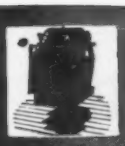
A joint with all these points is hard to make by **hand,** but easy if you use a

Jackson Belt Lacer

This machine makes a joint of intermeshing steel wire lacing that can be connected or disconnected instantly by inserting or removing the raw hide pin. The belt will be stronger at this joint than previously, and you will save on the average 80% of time and money in your belt lacing expenses, just as other textile mills are doing who install this machine.

Write for booklet. **Start saving that 80%.**

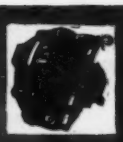
BIRDSBORO STEEL FOUNDRY AND MACHINE COMPANY
Birdsboro **Pennsylvania**



RODNEY HUNT MACHINE CO.

ORANGE, MASS., U.S.A.

HYDRAULIC AND MECHANICAL ENGINEERS



TURBINE WATER WHEELS — VERTICAL AND HORIZONTAL, HEAD GATE GEARING, REGULATORS, AND EVERYTHING PERTAINING TO WATER WHEELS AND MILL WORK.

IRON FLUMES AND PENSTOCKS.

McCORMICK TURBINES CYLINDER and BALANCE GATES

CLOTH FINISHING MACHINERY — INCLUDING ROTARY FULLING MILLS, CLOTH WASHERS, ROTARY COMBINED FULLING MILL AND WASHER FOR KNIT GOODS. ALSO ROTARY DYING MACHINES FOR CLOTH AND KNIT GOODS, AND HAMMER PUSHERS FOR FELTS, KNIT GOODS, ETC.

SOAPING MACHINES.

UNDERWRITER ROTARY FIRE PUMPS.
NATIONAL STANDARD TYPE A AND B MOTOR OR FRICTION GEAR DRIVE.

BRANCH OFFICE. 70 KILBY ST., BOSTON

CATALOGUE AND CIRCULARS FREE

SALEM ELEVATOR WORKS

SALEM, MASS.

ELEVATORS

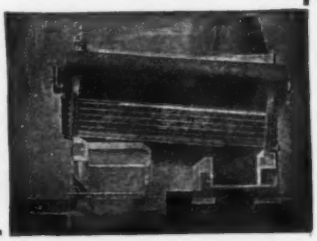
ESPECIALLY ADAPTED FOR MILL USE.

SEND FOR ILLUSTRATED CATALOGUE AND ESTIMATE.

The Murphy Automatic Smokeless Furnace

Burns Slack with Great Economy

The Murphy can be installed under any type of fire-tube or water-tube boiler and to units of any size.



SETTING UNDER TWO TYPES OF BOILERS SHOWN HEREWITH

MURPHY IRON WORKS

DETROIT, MICH.

Take Out the Moisture

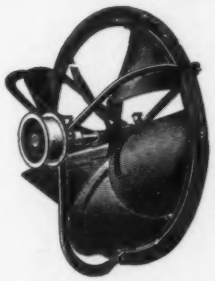
Too much moisture in your Mill, Dye House, or Bleachery, means inferior product. Remove the moisture—

With a BERRY Wheel

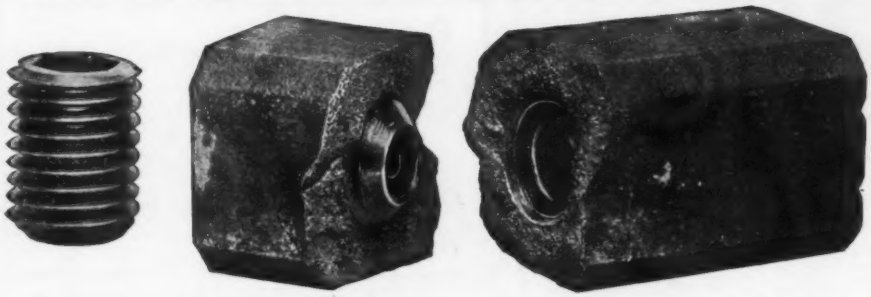
Keep the atmosphere clear.
Keep working conditions right.
Thus you will maintain efficiency in your working force and a BETTER and GREATER product will be the result.

Ask for detailed reasons why.

A. HUN BERRY, 23 West First St., Boston, Mass.



This is the Berry Wheel or Fan, the most effective agent on the market for drying and for eliminating steam and other impurities in the atmosphere.



Correct size of test block broken by a ¾ inch Allen Safety Set Screw, with wrench two feet long. Estimated pressure on point of screw 7 tons. The screw showed no indication of having been used.

Do you realize that over 1,500 people are yearly killed or crippled for life in the United States alone by projecting set screws?

Don't wait till you have an accident. Equip your machinery now with Allen Safety Set Screws and safeguard your workmen. All sizes from ¼" to 1" carried in stock. Send for circular No. 6 and sample screw.

The Allen Mfg. Co., 185 Sheldon St., Hartford, Conn.

IN 1843

THE BUSINESS OF

The American Tool & Machine Co., Boston

(Incorporated 1864)

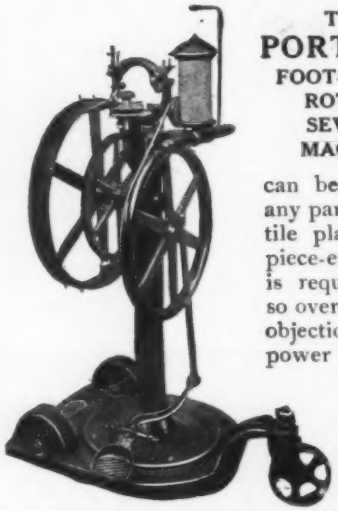
Was established. These seventy years have developed an extensive and complete Foundry and Machine Shop with facilities equal to any demand and also a continually increasing list of satisfied customers.

Power Transmission Machinery

Hydro-Extractors **Centrifugal Oil Separators**

Coating and Doubling Machines

USE IT ANYWHERE



THIS
PORTABLE
FOOT-POWER
ROTARY
SEWING
MACHINE

can be used in any part of a textile plant where piece-end sewing is required, and so overcomes, all objections to a power machine.

The cloth is stretched to a large feed wheel connected to looper shaft, which can be instantly detached

By a device peculiarly our own, needles do not break and stitches are all uniform length, and feed of cloth wheel is positive.

It will sew Cotton or Woolen Goods, Thick or Thin, Wet or Dry.

Send for complete catalog.

Satisfactory operation of all machines guaranteed.

DINSMORE MANUFACTURING CO.

SALEM, MASS., U. S. A.

"CORONATION"

Piece-End Sewing Machine

sent on trial most anywhere

Sews any Fabric Thick or Thin, Wet or Dry Without Change. Fine Stitch or Coarse Stitch.

Send for circular

BIRCH BROS.

Somerville, - Mass.

Also Finishing Machinery

Mr. Manufacturer

Ever have any motor trouble?

Better get busy at once.

Don't delay but consult

A man who can set you right.

Your trouble is our business.

Motors of every description

On hand at all times.

Thoroughly equipped to estimate on any plant.

Our installations must give satisfaction.

Reliable motors our ONLY line.

Specialists on motor problems.

WRITE FOR PARTICULARS AND CATALOGUE

E. B. DAY

Sales Office

512 ARCH STREET PHILADELPHIA, PA.

"NO WASTE"

Seamless Hard Fibre Roving Can

The Only Can For Fine Spinners and the Very Best for All Grades of Work.

It does not have the riveted seam that strains and breaks the sliver.

NO SEAMS or RIVETS

Absolutely Smooth

No Waste or Broken Ends

Write for prices.

MANUFACTURED BY THE

Standard Fibre Co.

SOMERVILLE, MASS.

"The Original Fan of the Many Blade Plan"

"Sirocco"
TRADE MARK.

Fans for Heating and Ventilating

"Save Space, Power and also Weight
And make the old types out of date."

Are especially adapted to the warming and ventilating of Textile Mills, Bleacheries and Dye Houses. Ask for Bulletin No. 340-TR descriptive of "Sirocco" Fans.

Cotton Mills in which "Sirocco" Heating, Ventilating and Humidifying Apparatus is installed

AMERICAN BLOWER COMPANY
DETROIT, MICH.
U. S. A.

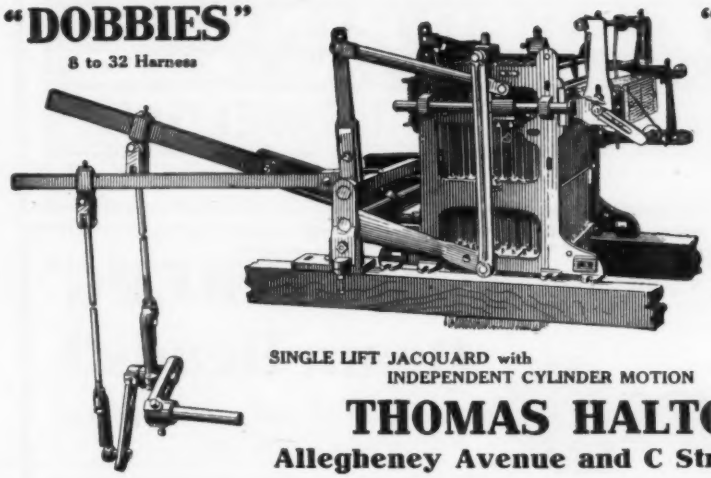
CANADIAN SIROCCO COMPANY, Limited, Windsor, Ontario, Manufacturers for Canada

"DOBBIES"
8 to 32 Harness

"JACQUARDS"
208 to 2608 Hooks

ALL TYPES

HARNESS BUILDING



SINGLE LIFT JACQUARD with INDEPENDENT CYLINDER MOTION

THOMAS HALTON'S SONS
Allegheny Avenue and C Street, Philadelphia

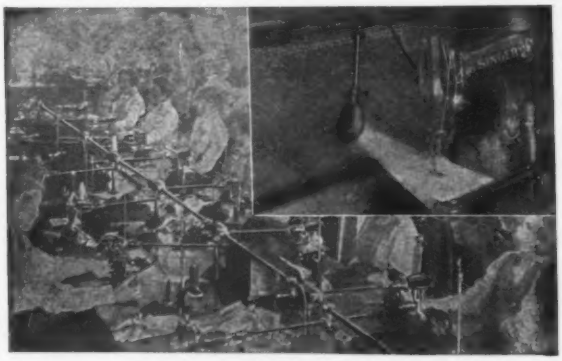
WILLIAM BODDEN & SON, Limited

The "BODDEN" Flyer

For QUALITY OF FINISH
For QUANTITY of PRODUCTION
HAS STOOD THE TEST OF YEARS

Sole Agents for U. S. A.

Thomas Mayor & Son, Olney Street, Providence, R. I.



Save Your Money—
Help Your Help—

You can do both by installing the Hinsdill System of Specific Lighting. It can be applied to practically all textile uses, and can be connected to all kinds of machines, in machine shops, etc., as well as in offices.

It concentrates the light where needed—keeps it out of the operatives' eyes, aiding your help to do more and better work.

And—the Hinsdill System will reduce your lighting bill 50%. Ask for proof.

Your own machinist or engineer can easily install both system and fixtures. Get prices and descriptive literature.

Hinsdill Electric Company
550 Fulton Street • • • Troy, N. Y.

THE DOUBLE, BURNISHED OR DIAMOND FINISHED
RIBBED RING WHITINSVILLE MASS.
MADE BY THE WHITINSVILLE SPINNING RING CO.
THE BEST THAT EXPERIENCE CAN PRODUCE, THAT MONEY CAN BUY

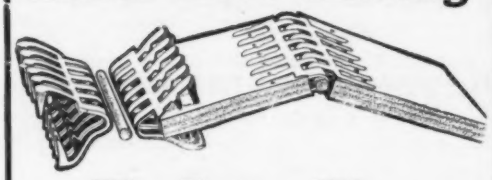
Did You Ever Hear of MOSSBERG Beam Heads?

Indestructible—clean—won't splinter
—won't break.
100 times more efficient.

Ask FRANK MOSSBERG COMPANY, • ATTLEBORO, MASS.

Established 1870
John Heathcote & Son
Providence, R. I.
Builders of Improved
Cloth Tentering and Drying Machinery
for WOOLENS, WORSTEDS, FELTS, etc.
Built Upright or Horizontal with Low Down Feed
Ventilating Fans a Specialty
Send for Catalogue

Alligator Steel Belt Lacing



The Better Way

because it is simplest and most efficient under trying conditions.

A hammer is the only tool needed. No belt too large and none too small to find an "Alligator" suited to the service.

This separable joint is smooth and flexible in service, and use will show a saving in belting and time, otherwise lost.

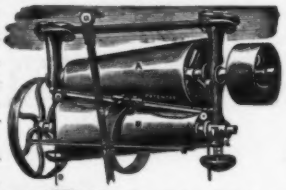
May we send you a free sample? Tell us the width, thickness and kind of belt you use and let service decide it's merit.

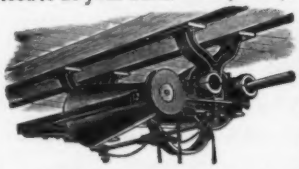
Flexible Steel Lacing Co.
542 West Jackson Blvd.
Chicago, Ill.

Variable Speed Countershafts

The Evans Friction Cone Pulleys will drive your machines at any desired speed from 1 to 6 by simply pulling a cord.

They are guaranteed to do your work.





We'll furnish them for either floor or hanging use.

Over Ten Thousand Sets in Operation in this Country and Europe.

Send for Catalogue.

EVANS FRICTION CONE COMPANY
G. Frank Evans. Newton Center, Mass.

Selecting Your Belt

You cannot judge a belt by its appearance. You must know what it will do in actual service. Probably no severer test could exemplify the strength and stability of

THE GANDY BELT

more effectively than is shown in the illustration above. Here **Gandy Belts** drive cement mills through air laden with particles of dust, grit and stone, and still they do not harden or slip.

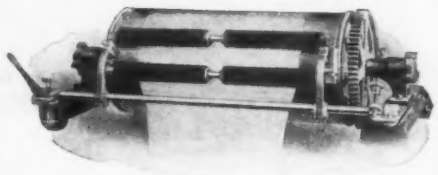
Any belt which will succeed in such extreme service as this is your safest belt investment in the Textile Industry, but in addition the **Gandy Belt** costs only one-third as much as leather and much less than rubber belting.

Will you write us for samples and complete information, now?

GANDY BELTING COMPANY
747 W. Pratt Street - - Baltimore, Md.
New York Office: 88-90 Reade Street

The Bristle Cloth Stretcher

(PATENTED)



Stretches the goods on

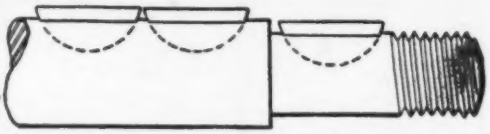
The Drying Cylinders

SAVES

Time — Labor — Money

AMERICAN FINISHING MACHINERY CO.
141 Milk Street, Boston

Key Seating Attachment
FOR
Whiton Gear Cutter



We offer an attachment for use with our Gear Cutting Machine, to cut key seats for the Woodruff System of Keying. Write for description, circulars and price.

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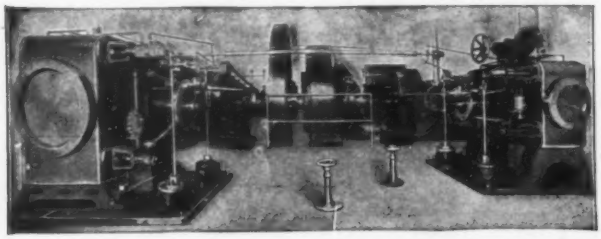

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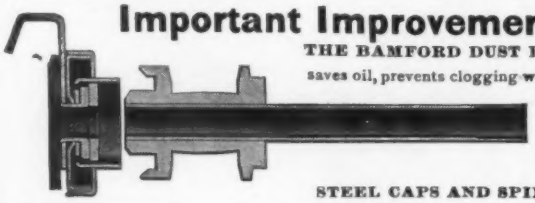

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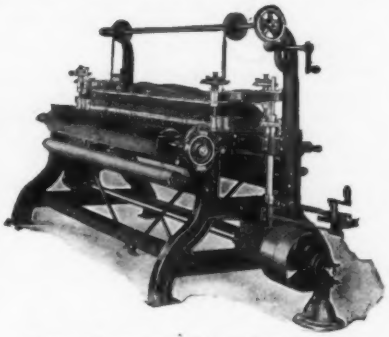

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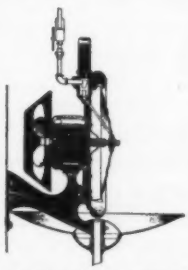

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TEXTILE WORLD RECORD

Published on the 12th of each month by

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Official American Textile Directory

Published annually, in two editions. Office, Large Size, **$3.00. Travelers',** Flexible, Smaller, **$2.00.**

A Complete Directory of Cotton, Woolen, Knitting, Silk, Flax and Jute mills of the United States and Canada, together with the Dyeing and Finishing Works, Bleacheries, Print Works and other Textile Establishments; about 7,000 in all. Full information is given about each mill in almost every instance, viz., the name of the company or firm, names of officers, agent, superintendent, the character of goods made, the machinery equipment, i. e., the number of sets of cards (or combs), the number of spindles, number of looms; whether the mill uses steam or water power, whether there is a dye house or not, the names of the selling agents or if the mill sells direct. All this and much other information contained in this book is arranged in a way to be instantly accessible.

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Published annually in a handy size for the pocket, $1.50.

It contains **full reports of every knitting mill** in the United States and Canada, giving capitalization, names of the officers, including superintendent and buyer; kind of goods made; number of knitting machines, whether latch or spring needle; number of sewing machines; whether the mill dyes or bleaches or finishes; kind of power; number employed; selling agent; kind of yarn bought; lists of the jobbers, manufacturers' selling agents, commission merchants, department stores and large retailers handling knit goods and the name of the person in charge of the knit goods department. List of dyers, bleachers, finishers, printers, etc., making a specialty of knit goods work. Special copyrighted maps of the mill districts, showing the cities and towns where there are knitting mills. It is indexed so any town or mill may be quickly found.

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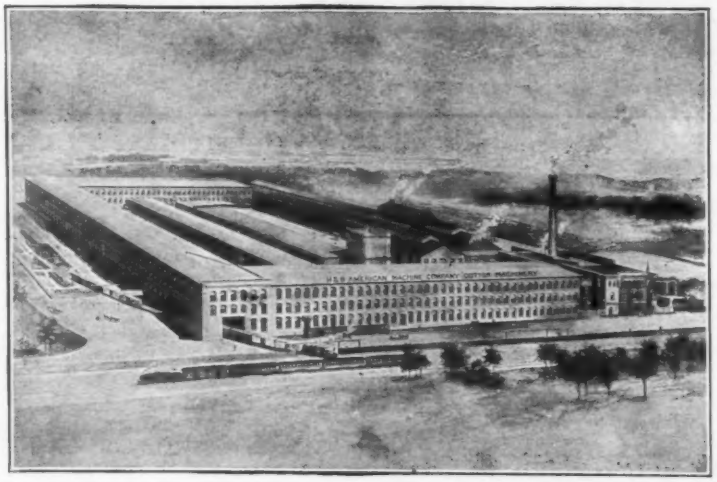
Correspondence

We solicit correspondence on textile subjects. Articles accepted will be paid for. Name and address must always be given, not necessarily for publication. Subscribers are invited to make free use of our Questions and Answers Department; correspondence is strictly confidential.

COTTON MACHINERY



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TEXTILE WORLD RECORD

APRIL, 1913

Monthly Comment.

An Anniversary

This issue marks the tenth anniversary of the consolidation of the Textile World and the Textile Record to form the Textile World Record.

The past decade has been a period of growth for the textile industries, in which this publication has shared. It has been marked by controversy and discussion over tariff problems, in which we have earnestly endeavored to advocate such views as seemed to us most likely to promote the permanent prosperity of textile manufacturers. We have not always been in accord with some whose opinions we respect, but we have been sincere in our convictions and have not hesitated to express our views, oftentimes when it would have been more pleasant and much easier to have followed the "stand patters" or said nothing. We believe that those who have not agreed with us, at least respect the sincerity and independence of our opinions.

The special field of this magazine relates to the processes and machinery of textile manufacture; during these past ten years its pages have recorded the development and progress of the textile arts at home and abroad, and constitute a veritable encyclopedia of the textile history of the times.

Although only ten years under its present name, the Textile World Record is the oldest textile publication in the world, being in direct line of succession to the Industrial Record, established in 1868, three years before the first English textile journal was published. For many years it was the only textile journal in America. It presents the combination at different times of eight different journals, the final combination of the Textile World and the Textile Record in 1903 merging the two leading process publications into a still greater journal. In these many years of its existence, it has acquired a subscription list and influence which we believe is not equalled. Men at the head of large mills today have been reading this journal regularly ever since they went into the mill. For thirty years it has been under the same personal management, who still continue in charge at the present time, and who take this occasion to once more extend to the trade their hearty appreciation of its long continued support.

A Swedish Wool Goods "Trust"

The size that makes a corporation a "trust" varies widely in different countries. This is illustrated by the wool goods "trust" recently formed in Sweden by the combination of the four largest wool spinning and weaving mills in that country. The new company, which has been named the "Aktiebolaget Forenade Yllefabrikerna" has a 6 per cent. preferred capital of 1,500,000 Kr. ($420,000) and common stock amounting to

2,500,000 Kr. ($700,000). The new company is to be managed by four directors, each of whom is to receive a salary of 20,000 Kr. ($5,600) per year. In addition to the fixed salary, 15 per cent. of the net profits is to be divided equally among the four directors.

—÷—

Simplifying British Weights and Measures

The British Weights and Measures Association, which has been out of sight and hearing for several years, showed signs of life recently at a meeting of the cotton section of the organization at Manchester, at which progress was reported in the work of substituting the 100-pound cental and the 1000-pound weight for the hundredweight of 112 pounds and the ton of 2240 pounds. The "Daily Consular and Trade Report" gives this account of the meeting:

> At a meeting of the cotton section of the British Weights and Measures Association just held in Manchester the Liverpool Cotton Association, the Spinners' and Manufacturers' Association, the yarn agents, and the home trade merchants were represented.
>
> T. R. Ellison, of Liverpool, reported on the success that they had achieved in getting the Egyptian cotton market to adopt pence and hundredths of pence in their quotations for raw cotton, thus securing uniformity with the American market. There were still some objections to be overcome in India and on the continent of Europe in the endeavor to get the system adopted for East Indian cotton. Mr. Ellison was thanked for his efforts in the matter. It was decided to reopen the question with railway companies and others of getting the cental (100 pounds) and the thousand weight (1,000 pounds) adopted as standard weights in place of the present hundredweight (112 pounds) and ton (2,240 pounds). The former weights, it was stated, are now practically universally used in the cotton trade, and previous efforts by the committee had led to the British Government Board of Trade keeping their cotton statistics by this system—a system which practice had proved to be preferable to the hundredweight and ton system for calculations generally. The desire of the committee now is to secure the adoption of the same system in regard to the carriage of goods and also in regard to coal, flour and other commodities with which they deal.
>
> It was stated by George Moores, the secretary, that the central system was already largely in practice in other trades besides the cotton trade, notably in the corn and tobacco industries, and that agriculturists as a body were more and more coming to regard the cental as preferable to the hundredweight.

We earnestly trust that this meeting at Manchester marks a permanent change in the do-nothing policy of the association in recent years. We have been reliably informed that the slackening in the work of the British Association of Weights and Measures has been due to the failure to secure adequate financial support from manufacturers and others who, after the defeat of the pro-metric legislation in Great Britain and the United States, concluded that all danger was past and British standards were secure. This, however, was a great mistake. British weights and measures cannot be successfully defended and simplified by spasmodic efforts, no matter how brilliant. The work requires patient, vigorous and intelligent effort year in and year out in all parts of the world by such an organization as the British Weights and Measures Association. Speaking figuratively, of course, its secretary should never sleep, but should be always on guard against, not only bolts from the blue, but that which is always with us, the continuous pressure and insidious schemes of the metricite contingent to work the metric system into trade and industry regardless of the inevitable and incurable confusion.

The British Weights and Measures Association should be supported and its former excellent work resumed and continued without interruption. Otherwise the weights and measures of English speaking countries may be thrown into a chaos even greater than that found in other countries.

—÷—

The Indian Cotton Industry

The development of cotton spinning is always marked by an increase in the fineness of the yarn spun and a decrease in the quantity of raw cotton consumed per spindle. This finds an illustration in the Indian cotton spinning industry which in the years 1905-06 produced 430,472,002 pounds of cotton yarn on 3,636,764 spindles, an average of 118 pounds per spindle, as compared with 590,841,667 pounds of yarn on 6,020,054 spindles in the year 1911-12, an average of 98 pounds per spindle.

The table from which these figures are taken appears in the official Indian Trade Journal which, in commenting on the statis-

tics, makes the mistake of comparing the yearly production of the yarn per spindle of the Indian cotton spinning mills with an arbitrary quantity which is assumed to be the maximum production. This method of comparison is explained by the Journal as follows:

> The standard of maximum hitherto taken as applicable to the figures for a period of 12 months has been that of 138.96 pounds of yarn per spindle per annum attained in the period of five months, May to September, 1905; but in the month of August in that year production attained a level equal to 140 pounds per spindle per annum, and since this gives a fuller gauge of the maximum capacity it is not adopted for that purpose.

The adoption of such a figure as a maximum production is wholly unwarranted because the production of a spindle varies widely with the count of yarn. The production of 138.96 pounds of yarn per spindle in the five months of 1905 is by no means the maximum production of the spindles, because a much larger quantity could have been produced if coarser yarn had been spun.

—:—

The British Merchandise Marks Act

The British law (50 and 51 Vict.) of Aug. 23, 1887, known as the Merchandise Marks act has a two-fold object:

1. To prevent the fraudulent use of trade marks;

2. To prevent the sale of goods under a false description.

The merits of an act of this character for accomplishing what the advocates of "pure textile" legislation desire to have accomplished, will be clearer if attention is confined to that portion of the act relating to false trade description. Section 2 of the British law provides that:

> Every person who applies any false trade description to goods (or causes it to be done) shall, subject to the provisions of this Act, and unless he proves that he acted without intent to defraud, be guilty of an offense against this Act.
>
> Every person guilty of an offense against this Act shall be liable—
>
> (1) On conviction on indictment, to imprisonment, with or without hard labor, for a term not exceeding two years, or to fine, or to both imprisonment and fine; and
>
> (2) On summary conviction to imprisonment, with or without hard labor, for a term not exceeding four months, or to a fine not exceeding twenty pounds, and in case of a second or subsequent conviction to imprisonment, with or without hard labor, for a term not exceeding six months, or to a fine not exceeding fifty pounds.

Section 3 of the Act defines the term "trade description" as follows:

> The expression "trade description" means any description, statement, or other indication, direct or indirect.
>
> (a) As to the number, quantity, measure, gauge, or weight of any goods, or
>
> (b) As to the place or country in which any goods were made or produced, or
>
> (c) As to the mode of manufacturing or producing any goods, or
>
> (d) As to the material of which any goods are composed, or
>
> (e) As to any goods being the subject of an existing patent, privilege, or copyright, and the use of any figures, word, or mark which, according to the custom of the trade, is commonly taken to be an indication of any of the above matters, shall be deemed to be a trade description within the meaning of this Act.

Attention is called to these parts of the Merchandise Marks Act which relate to false trade description, not because it is claimed that the British Act in its present form is exactly suited to the needs of the United States, but because it is believed to embody the principle upon which legislation to prevent deception in the sale of textiles should be based, as distinguished from such a measure as the Murdock "pure textile bill," which is based on the wrong principle. The British act forbids the false description of goods. The Murdock bill goes into an elaborate explanation of what is the right description of textiles and then directs that all textiles shall be labeled according to the Murdock idea. Under the British act the correct description of merchandise, when open to question, is settled by the courts from the evidence, the accumulated decisions constituting a guide for the future administration of the Act. Under the Murdock bill the description of merchandise is settled by the definitions in the law, which it is certain impose impossible requirements.

We suggest that the advocates of the Murdock bill study the British act and their own pet measure with the object of framing a law that will prevent the evil their bill is aimed at.

Worsted Serges from Yorkshire

In our December, 1912, issue we gave a report on low grade English woolens, with analyses of a number of representative fabrics and a comparative statement of the Payne and Underwood rates on the various cloths. Our March issue contained a similar report on medium grade English wool goods. This month we are able to report on English worsted serges for women's wear. It is impossible to obtain satisfactory illustrations of plain serges, but the samples can be seen at our Boston office and will be given to interested manufacturers on application. Our English correspondent's report is as follows:

WORSTED SERGES FROM ENGLAND

I send you a collection of staple worsted serges obtained from merchants in the dress goods trade. The lighter weights are intended for dresses and the heavier for ladies' skirts and costumes.

The sample No. 11, 50 in. wide, 15 1/4d. (30 1/2 cents) is—like all the rest—a little dearer now than some time back. It is made in Bradford and has sold from the mill by the thousand of pieces at 14 3/4d. (29 1/2 cents) (before the rise), being resold by Manchester and Bradford merchants at 16 7/8d. (33 3/4 cents) to the drapers. This price of "sixteen-seven" (16 7/8d.) is one of the favorite limits as it allows the draper to sell to the public at 1s. 11d. (46 cents). The cloth was regarded as exceptional value at the price.

Three samples, Nos. 8, 9 and 10, are made by a good Keighley firm of spinners and manufacturers and come closer to men's weights. They are 52 inches wide and are respectively 2s., 2s. 6d., 2s. 11d. (48, 60 and 70 cents) in price. They represent standard value in crossbred blue serges.

The two samples, Nos. 12 and 15, are 54 inches and cost 3s. 3d. and 3s. 6d. (78 and 60 cents) respectively. They are made outside of Bradford of bought yarn by a carded woolen manufacturer who has been led into the worsted trade by his employment of worsted warps for woolen weft goods and by the large recent demand for blue serges. Although the production of a comparative outsider the goods are excellent value and have given every satisfaction in use. Sample No. 14, 54 inches wide, 17 1/2d. (35 cents) is one of his woolen weft, worsted warp cloths intended for ready-made skirts, for which purpose it has been found suitable in every way.

Sample No. 13, 42 inches wide, 13 1/4d. (26 1/2 cents), another of these worsted warp woolens, is of a very fast blue dye, is a standard quality of another maker and is also used principally for skirt making.

The seven patterns, Nos. 1 to 7, marked "grease-dyed," are from an old-established line that has held its own for many years. The pieces are dyed without scouring and the grease in them is perceptible both by touch and smell. Some well-founded complaints are received that the goods harbor dust, but the character of the cloth is radically changed if the goods are scoured, and customers have either to take them or leave them. The manufacturer sells them to the same people year after year and does not see his way to withdraw the patterns. They are rather exceptional at their price and are made in an ascending scale of widths. The 41 inch, No. 1, at 16d. (32 cents) and the 42 inch, No. 2, at 17d. (34 cents), are of less account than the better qualities: 44 inch, No. 3, at 19 1/2d. (39 cents) 45 inch, No. 4, at 21d. (42 cents), 46 inch, No. 5, at 23d. (46 cents), 47 inch, No. 6, at 26d. (52 cents) and 48 inch, No. 7, at 31d. (62 cents). These are the widths in which the cloths are bought by dress goods merchants. Makers-up of course prefer 54 inches and the prices in that width are proportionate. The narrow widths are dying out, but by force of old custom the width varies with the quality in the drapery trade. In 54 inches the lowest of these grease-dyed serges would be 21 1/4 to 21 1/2d. (42 1/2 to 43 cents) and the best would be about 35d. (70 cents) a yard.

Apart from the difference in handle caused by the omission of scouring there is a gain in weight and when worsteds of these commoner classes are sold for export in large quantities their price is practically determined by weight. The practice of grease-dyeing is condemned by many, but it is clear that some consumers make no objection to it.

The prices given are those obtaining at the present time in the home trade for ordinary quantities. Depending on the tone of the market at the moment the terms of payment and the size of the order, some concession might be got by a shipper.

We have analyzed the fifteen serges that accompanied the report, the results being as follows:

No. 1. 1s. 4d. (32 cents) per yard, 41 inches, 6 ounces. Warp, 62 ends 2/37s wors. Filling, 52 picks single 30s wors. Quality, fine 3/8, 6-leaf twill.

No. 2. 1s. 5d. (34 cents) per yard, 42 inches, 6.2 ounces. Warp, 64 ends 2/41s wors. Filling, 64 picks single 31s wors. Quality, fine 3/8, 6-leaf twill.

No. 3. 1s. 7 1/2d. (39 cents) per yard, 44 inches, 6.9 ounces. Warp, 67 ends 2/43s wors. Filling, 63 picks single 25s wors. Quality, fine 3/8, 6-leaf twill.

No. 4. 1s. 9d. (42 cents) per yard, 45 inches, 7.5 ounces. Warp, 65 ends 2/40s wors. Filling, 63 picks single 24s. Quality, fine 3/8, 6-leaf twill.

No. 5. 1s. 11d. (46 cents) per yard, 46 inches, 8.6 ounces. Warp, 71 ends 2/37s wors. Filling, 62 picks 2/22s wors. Quality, fine 3/8, 6-leaf twill.

No. 6. 2s. 2d. (52 cents) per yard, 47 inches, 9.9 ounces. Warp, 67 ends 2/32s wors. Filling, 60 picks single 18s wors. Quality, fine 3/8, 6-leaf twill.

No. 7. 2s. 7d. (62 cents) per yard, 48 inches, 11.1 ounces. Warp, 68 ends 2/32s wors. Filling, 67 picks single 18s wors. Quality, fine 3/8, 6-leaf twill.

No. 8. 2s. (48 cents) per yard, 52 inches, 10 ounces. Warp, 74 ends 2/36s wors. Filling, 59 picks single 22s wors. Quality, 3/8s, 6-leaf twill.

No. 9. 2s. 6d. (60 cents) per yard, 52 inches, 11

ounces. Warp, 73 ends 2/32s wors. Filling, 55 picks single 19s wors. Quality, 3/8, 6-leaf twill.

No. 10. 2s. 4d. (56 cents) per yard, 52 inches, 10.4 ounces. Warp, 76 ends 2/38s wors. Filling, 61 picks single 20s wors. Quality, fine 3/8, 6-leaf twill.

No. 11. 1s. 3 1/4d. (30 1/2 cents) per yard, 50 inches, 7.7 ounces. Warp, 47 ends 2/33s wors. Filling, 41 picks single 16s wors. Quality, low 3/8, 4-leaf twill.

No. 12. 3s. 3d. (78 cents) per yard, 54 inches, 13.1 ounces. Warp, 64 ends 2/31 wors. Filling, 55 picks 2/25s wors. Quality, half blood, 4-leaf twill.

No. 13. 1s. 1 1/4d. (26 1/2 cents) per yard, 42 inches, 9.3 ounces. Warp, 38 ends, 2/30s wors. Filling, 29 picks 1.9 runs woolen. Quality, 1/4 blood, 4-leaf twill.

No. 14. 1s. 5 1/2d. (35 cents) per yard, 54 inches, 11.3 ounces. Warp, 42 ends 2/34s wors. Filling, 32 picks 2.3 runs. Quality, 1/4 blood, 4-leaf twill.

No. 15. 2s. 6d. (60 cents) per yard, 54 inches, 10.6 ounces. Warp, 61 ends 2/28s wors. Filling, 50 picks single 20s wors. Quality, 3/8 blood, 4-leaf twill.

The Payne tariff provides that the duty on women's and children's worsted dress goods weighing over four ounces per square yard shall be 44 cents per pound and 50 per cent. ad valorem, if valued at above 40 cents and not above 70 cents per pound; if valued above 70 cents per pound the duty is 44 cents per pound and 55 per cent. ad valorem. The Underwood woolen bills of 1911 and 1912 fixed the rate on dress goods at 45 per cent. ad valorem, with a duty of 20 per cent. ad valorem on raw wool. The Payne and Underwood duties and the fifteen fabrics accompanying the report are given in the following table:

Style	Width	Ozs. per yd.	English price per yd.	Payne Duty Per yd.	Payne Duty ad val. %	Underwood Duty Per yd.	Underwood Duty ad val. %
1	41	6.	$.32	$ .341	106	$.144	45
2	42	6.2	.34	.357	105	.153	45
3	44	6.9	.39	.403	103	.176	45
4	45	7.5	.42	.437	104	.189	45
5	46	8.6	.46	.489	106	.207	45
6	47	9.9	.52	.558	107	.234	45
7	48	12.2	.62	.676	109	.279	45
8	52	10.	.48	.539	112	.216	45
9	52	11.	.60	.632	105	.27	45
10	52	10.4	.56	.594	106	.252	45
11	50	7.7	.305	.365	119	.137	45
12	54	13.1	.78	.789	101	.351	45
13	42	9.3	.265	.388	146	.119	45
14	54	11.3	.35	.486	139	.158	45
15	54	10.6	.60	.621	103	.27	45

The analyses which we have given, showing the yarn counts, threads per inch, qualities and weaves, the statement of English selling prices, weights and widths and the samples of the various fabrics, are of great importance to American wool manufacturers just now as they face the certainty of a thoroughgoing revision of schedule K. In this and the two preceding reports on English fabrics, we believe we have given the wool manufacturing trade data that shed a flood of light on the competition that is likely to come from foreign wool manufacturers under the new tariff. We feel well repaid for the labor in obtaining and preparing the various exhibits. At the same time it would be a most serious mistake for American manufacturers to conclude that the facts and figures we have published or that any facts and figures which may be published can show exactly what foreign competition in wool manufacturing is to be with an ad valorem tariff. In order to determine the character of this competition and fit themselves to meet it successfully wool manufacturers must take into account conditions which cannot be stated in writing and with which a very large majority of American wool manufacturers are at present unacquainted. These conditions relate to the world's supply of wool, wool by-products and shoddy.

PRODUCTS NOW EXCLUDED

The specific duties on the raw materials of wool manufacture which, with the exception of three years, have been in force since 1867, have excluded from the United States a large part of the foreign stocks of wool and practically all of the foreign supply of wool by-products and shoddy. The only raw materials that have been or could be imported under a specific tariff have been light shrinking, medium and high priced grease wools. As a result of this concentration of the American demand on a comparatively small part of the foreign supply of raw material, it is the custom of dealers in foreign wool markets to separate for the inspection of American buyers light shrinking wools suitable for the American trade, while other wools are sold to foreign mills.

It is under such conditions that two generations of woolen and worsted manufacturers have done business in the United States. Wool manufacturing abroad, on the other

hand, has been developed under a system of free access to the world's supply of wool and by-products. An ad valorem tariff on wool and by-products means a radical change of conditions for the American wool manufacturer. It may not bring with it any marked change in the cost of these materials, but the change from specific to ad valorem rates will put an end to the exclusion of certain raw materials and place all kinds of these materials on an equality so far as the tariff is concerned. Americans will suddenly find themselves within reach of raw materials about which they now know little or nothing. Nothing better illustrates this than the ignorance of even the best-posted American buyers of foreign wool concerning the clips and qualities that have been excluded from the United States by the specific tariff. Although they have visited the London, Australian and South American markets for years their attention has been confined to the wools suitable for the American trade, and as a result their knowledge of that vast quantity and a great variety of wools that make up the remainder of the foreign supply is of the most limited character. That being true of the wool buyers, it will be readily understood that the owners and managers of American mills, who have had no occasion to visit the foreign wool markets, know even less about the possibilities in the way of prices and grades abroad.

RADICALLY DIFFERENT CONDITIONS

When we consider that the cost of raw material constitutes from one-half to two-thirds of the cost of wool goods, we recognize at once the radical character of the transformation that the coming Underwood tariff on wool and wool goods will bring about for American wool manufacturers. The knowledge of the world's wool supply, of grades suited for certain desired results, the familiarity with prices and the customs of the trade, these are the chief advantages that foreign wool manufacturers will possess over their American competitors. And these are the advantages that no pencil can figure out nor that any experience in the United States can fit us to overcome. It is only by patient, careful study of the raw material supply in foreign markets and the development of adequate American markets for foreign wool and by-products that our mills can be placed in a position to meet foreign competition. Such training and preparation will take time and during the period of readjustment much of the protection of such ad valorem rates as may be imposed will be lost by reason of the lower cost of raw material in foreign mills resulting from more skillful selection, buying and mixing of the various kinds of stock. It is in these facts that we find the strongest reason for urging a conservative adjustment of tariff rates on wool and wool goods by the 63d Congress.

IMPORTANCE OF CAREFUL REVISION

The government that has permitted a great industry to be developed under the unequal and arbitrary conditions that necessarily accompany specific rates on raw materials and partly and wholly manufactured wool goods rests under an obligation that no new administration has a right to repudiate, the obligation to bring about new and more natural conditions so as to give domestic manufacurers a reasonable chance to adjust their business to them. Not only should the rates be revised carefully so as to avoid subjecting the home industry to competition that would prove ruinous because our mills are unprepared for it, but the date at which the rates on raw materials go into effect should be so fixed that the American mills will have an opportunity to obtain foreign raw material under the new tariff and convert it into goods by the time the new rates on goods become operative.

Comparison of the total amount of cotton, silk and woolen hosiery, $4,678,382, exported to the United States from Chemnitz in 1910, with $2,962,913, the total amount in 1911 shows a decrease of $1,715,469.

The cotton spinning mills of Turkey are generally owned and operated by natives or by Greeks, and nearly 80 per cent. are women and children. The men earn from $.352 to $.66 per day and the women $.132 to $.308 per day.

Safety Set Screws

Every mill owner, manager and mechanic should read the notice of the Allen safety set screw, which appears in the new machinery department of this issue. This form of set screw effectually prevents accidents caused by projecting set screws on revolving shafting becoming caught in the clothing of the workpeople. The remedy for the annual slaughter from this cause is simple and consists in the use of set screws that do not project above the revolving surface.

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The Agitation for a Pure Textile Law

For a year or more Charles Coopey, of Charles Coopey & Son, merchant tailors, Portland, Ore., has been energetically promoting a double-headed campaign to secure the establishment of woolen mills in Oregon and the enactment of a law requiring the labeling of textiles to show their composition. We took occasion to commend the mill enterprise as a step toward the correction of one of the most serious evils in the textile industry, the concentration of the mills in great industrial centers for the manufacture of goods consumed in all parts of the country. As for the "pure textile" law, while commending the general object, which is the protection of the consumer against deception, we stated our objections to the bills proposed by Congressman Murdock and others. In reply Mr. Coopey writes the following letter, in which he shows himself mistaken, but so entirely sincere as to become an excellent type of that large number of well-meaning, but misguided men and women who are clamoring for the Murdock or some other shoddy bill:

Portland, Ore., March 5, 1913.

Editor Textile World Record:

Dear Sir:—I wish to thank you very much for your kindly expressions as to our endeavoring to build up the woolen industry out West; also wish to thank you for your leaflet, "A Test for the Murdock 'Pure Textile' Bill," which I read with great interest, but must say I am very sorry, and also somewhat surprised, that you do not agree with us in the honest branding of woolen fabrics, so that the innocent and ignorant can be protected against the unscrupulous manufacturer and trader. We think the public has a right to know what they are getting for their money. We quite agree with you that wool "right off the sheep's back," mungo and shoddy, exhibit the same chemical reaction and that they will char in the same manner. We will also admit that the law to govern such things may be at times somewhat hard to carry out, but you admit that there is a very simple way to get over this obstacle; and besides, it is somewhat hard at times to stop not only highway men from carrying on their business, but also the various other bunco games. But this great nation does not stop because an undertaking is a little hard, and I do not think they will attempt to do so in this instance. So I do not believe we have anything to discuss in connection with the scientific part of this subject and that we can get down to the practical and honest part of the controversy.

To start with, I wish to tell you some of my reasons for wishing to see woolen fabrics, in fact, all fabrics, branded as to their real contents. First: I am in favor—and I feel sure you are also—of honest trading. Now, generally speaking, the public knows as little about woolen fabrics as a toad does of his greatgrandfather. This public depends upon the mill and the storekeeper and their advertising to secure their clothing. Under the present law I have seen Eastern made cotton worsteds and clothing made in the East sold for Oregon wool and Oregon made clothes. (I have seen woolens and blankets with 80 per cent. of shoddy,—and poor shoddy at that,—sold as Oregon wool. And I wish to say that this condition does not apply to Oregon only, but is being practiced in other States as well.) During my twenty and more years in Oregon with these conditions existing, I have seen the purchasers of these goods, when asked to buy an honest piece of Oregon woolen,—all pure sheep's wool,—say: "No, sir. No more Oregon wool for me. I had a suit once (referring to these cotton worsteds and shoddy goods) and it was no good. It did not wear nor keep its color nor hold its shape." And if you attempt to tell him that what he bought was not Oregon wool, I have received the reply, "Yes. I bought it at such and such a place, and they told me it was all Oregon wool." And in some cases I have had them add, "And that man is a great worker in our church and is a very successful business man. He has quite a lot of property that he has accumulated."

Now, sir, without my giving you more reasons (and I can, if needed), I believe you and your readers will agree with me in saying that this is not only obtaining money under false pretences, but it is a great libel upon our State and upon the wool it grows. Much of this wool is of a splendid quality.

We have said nothing yet of the bad effects it has upon the prices obtained by the grower for his wools. The supply and demand is bound to regulate the price of an article. The effect of selling shoddy and mungo (or stock that has been reworked from one to twenty times) as wool is bound to depreciate the price of sheep's wool. Don't you think so?

Supposing we turn this thing around a little and wonder for a minute what the woolen manufacturer would say if, when receiving one or more bales of scoured wool, bought at say 50 to 60

cents per pound, and upon opening the bale he should find from 10 to 80 per cent. of shoddy or mungo, the market value of which may be from 10 to 30 cents per pound; or if when selling his goods at so many dollars per yard, the same woolen manufacturer should receive dollars that were light in weight or of metal lacking in fineness, so that a dollar was worth only 70 or 80 cents instead of 100 cents. Don't you think he would soon be running to the government and say, "Oh! Please, Mr. Uncle Sam, can you not protect us against these fraudulent traders? In this bale of wool I thought I was getting sheep's wool and when I opened the same, I found such and such a percentage of shoddy and mungo, or reworked stock in them, and when I spoke to them about it, they said, 'Oh, that is all right. It all has the same chemical action. If you char them, they will all char just the same.'" I think you can hear the manufacturer say, "It is all right! When I buy wool, I want wool; and when I buy shoddy, I want to pay just for shoddy. I will order shoddy and mungo when I want it."

The manufacturers of the whole country would demand a law to protect them and say that they did not want to be fleeced out of their money in that way.

Now, sir, I am going to ask one or two questions. First. If shoddy and mungo are as pure and as good as wool, why do they always label them "All Wool" instead of Shoddy and Mungo? Second. If shoddy and mungo are as pure as wool, is it as strong? I do not mean putting short or fine clothing wool up against shoddies that could be used for combing, but I mean putting wool and shoddy of equal length and coarseness one against the other. Are they both of equal strength? Would you want, when ordering wool, to have shoddies delivered to you? I do not believe you would. For you yourself admit that reworked stock is not so good as the new wool. Then why let the public be fooled? The government is supposed to protect the innocent against the smooth,—or what is today known as the "successful" business man. I want to see the woolen manufacturer, the woolen jobber and the retailer of woolen fabrics have to brand their goods exactly what they are. You do not seem to object to a jeweler's having to brand his gold as to whether it is 14 or 18 karat fineness. Then why object to the branding of manufactured woolens? And let us get down to not only making, but also trading, in honest wares and sell our goods for just what they are, and by so doing merit the confidence of not only the consumer but also the large buyer. This would do away with very many of the lamentations we hear from some of the woolen manufacturers when he complains that buyers have a preference for imported goods against the home made product. A buyer has to buy what his customer demands and as soon as the consumer's confidence is such that he will demand American made goods, the buyer, of course, will order them. This will mean an increase in price for the manufacturer and make us feel very much more proud of ourselves when we find both men and women wearing American made cloths, both woolen and worsteds, because they can be relied upon both in workmanship and the stock from which they are made.

I apologize to you for the length of this letter but I feel that you are a man who likes honest expressions, and who knows but that you may change your own mind yet?

Very respectfully yours,

Chas. Coopey.

If Mr. Coopey will read our editorials on the Grosvenor and Murdock shoddy bills he will find his questions answered and his propositions refuted. We will call attention briefly to the various points he raises:

1. We approve of the "honest branding of all fabrics". The trouble with Mr. Coopey is that he wants the Murdock bill which would put a premium on the dishonest branding of shoddy goods as "pure wool," without the possibility of detection and punishment. He says he is in favor of "honest trading," but he is working to making "dishonest trading easy."

2. It is not enough to admit that "the law would be hard to carry out"; it would be impossible. It is mere buncome to talk about "this great nation's not stopping because an undertaking is a little hard." This great nation will stop and stop suddenly, if it comes into conflict with natural laws by attempting to distinguish wool from wool shoddy in finished wool goods.

3. Mr. Coopey shows how much he has to learn about this question when he says: "I do not believe we have anything to discuss in connection with the scientific part of the subject and we can get down to the practical and honest part of the controversy."

4. Mr. Coopey is right when he asserts that the public knows little about woolen fabrics. If the people knew more there would be less agitation for the Murdock shoddy bill.

5. We do not question Mr. Coopey's good faith, but he is obviously and absurdly wrong when he says:

> I have seen woolens and blankets with 80 per cent. of shoddy, and poor shoddy at that, sold as Oregon wool. And I wish to say that this condition does not apply to Oregon only, but is being practiced in other States as well.

Unless he has a knowledge not possessed by others, Mr. Coopey cannot be sure of the percentage of new wool and shoddy in wool

goods, for both are wool, nor can he tell whether there is any shoddy whatever present. To sell such goods as all wool is no more a libel on Oregon than it would be a libel on Montana to mix old copper with new and use it in the manufacture of copper articles.

6. Mr. Coopey says:

> The effect of selling shoddy and mungo (or stock that has been reworked from one to twenty times) as wool is bound to depreciate the price of sheep's wool. Don't you think so?

We certainly do think so, and in that fact is found one important reason why so large a population can exist in Oregon and other parts of Northern United States. Without the aid of shoddy the wool clip of the world would provide each person outside of the tropics with about 13 ounces of wool cloth or about a yard of light weight wool cloth 54 inches wide. We ask Mr. Coopey, who is a tailor, how he would clothe a man, woman or even a child to live in the Oregon climate with that yearly allotment of wool cloth. Without shoddy, wool would be a high-priced luxury as real silk is now. As a result the population of Oregon and of other parts of the world in the same latitude would shrink enormously. The number of men's suits sold annually in Oregon, now estimated by Mr. Coopey at 500,000, would shrink in proportion. These facts should moderate the Oregonian rage against using sheep's wool more than once.

7. The shoddy packed in bales of wool, the 70-cent dollar and the branding of gold, that Mr. Coopey so triumphantly points to, are beside the mark. We are unreservedly in favor of a bill that can be enforced and that would provide needed protection to the consumers of textiles against being deceived by reason of their own ignorance on the acts of the sellers. Under such a bill, whose general features are outlined in another part of this issue, it would be possible in the sale of textiles to stop the deception that can be detected, such as, for example, the sale of cotton worsteds as all wool.

8. Now as to Mr. Coopey's questions. Goods made entirely of the wool fiber, whether new wool, shoddy or mungo, are labeled "all wool" because they are all wool. The wool fiber is undoubtedly weakened and shortened by the processes of manufacturing, so that shoddy or mungo is not as strong or as long as the new wool from which it was originally derived. It is equally true, however, that much of the material that the Murdock bill would condemn as shoddy is superior in length and strength to much of the new wool that the same bill would label "pure wool."

9. The imported products and the prejudice against home-made goods are human traits, common to the people of all countries. It is aggravated in this country by the fact that under the specific tariff on woolens only the high-priced fabrics can be imported. If Mr. Coopey will take the time to read recent issues of this magazine he will learn something about the cheap woolens of England. With a tariff that bears equally on low and high priced woolens the people in this country will lose much of their preference for imported wool goods, providing a law such as we advocate is passed, preventing the sale of imported goods as "American" or of American goods as "imported."

10. Mr. Coopey asks: "Who knows but that you may change your own mind yet?" We expect that our mind will be changed regarding this question when the evidence shows that we are wrong. If Mr. Coopey will apply to the Murdock bill the test we suggested in August, 1912, he may find it necessary to change his own mind.

The Philippine Market for Cotton Goods

The following extract from a recent bulletin issued by the Bureau of Insular Affairs calls attention to the rapid increase in the exports of cotton goods from the United States to the Philippines since the Payne law was enacted providing for the free entry of American products into the archipelago.

> For the first time for an extended period, covering approximately a year, the Philippine Islands have become the greatest purchaser of American manufactured cotton cloths. For the ten months ending with the month of October, the Philippine Islands purchased cotton cloths of American manufacture amounting to $4,121,646, exceeding slightly the amount of such cloths purchased by China, and practically doubling the amount purchased by Central America. The islands are at

present purchasing 70 per cent. of their cotton cloth in the United States. Fifteen years ago there was hardly enough American cloth in the Philippine Islands to make a girl a dress, and now the Philippine Islands have become the best customer of the United States and the outlook for a further increase is excellent. The total imports of merchandise for the ten months were $53,508,140, 40 per cent. of which came from the United States. The increase as compared with the corresponding ten months of the preceding year is about 33 per cent.

The exports of cotton cloths from the United States for the ten months ending October, 1912, as reported by the Bureau of Commerce, were valued at $26,017,482 and distributed as follows:

United Kingdom	588,639
Canada	1,741,062
Central American States and British Honduras	2,236,911
Mexico	304,887
Cuba	1,596,585
Haiti	971,094
Other West Indies and Bermuda	1,617,435
Brazil	100,087
Chile	688,144
Colombia	1,082,910
Other South America	1,116,465
Aden	1,666,265
China	4,022,024
British East Indies	1,169,728
British Oceania	806,744
Philippine Islands	4,194,075
Other Asia and Oceania	523,714
Other countries	1,590,713
Total	26,017,482

THE TEXTILE EXHIBITORS' ASSOCIATION

The Board of Directors of the Textile Exhibitors' Association, Inc., recently held a meeting, at which the invitation from the Southern Textile Association and the Greenville (S. C.) Board of Trade, to hold an exhibition in that city this fall was carefully considered. While the final action of the Board was not in favor of holding the Exhibition, yet the Board was unanimous in appreciation of the most courteous invitation. The reason for this action was due to the short time which would be allowed for preparation, and also to the fact that action has already been taken to hold a large exhibition in Boston, in April, 1914. It is the intention of the Association to incorporate the cotton, woolen, hosiery and knit goods trade in the coming exhibition, and for this purpose the entire Mechanics Building will be used.

Invitations to the various Associations of Manufacturers will be issued, inviting them to hold meetings during the Exhibition. With this end in view a hall will be set aside and ample facilities will be accorded them for business meetings.

THE NATIONAL ASSOCIATION OF COTTON MANUFACTURERS

The annual meeting of this association will be held on April 24 and 25 in Huntington Hall, Massachusetts Institute of Technology, Boston, Mass. The sessions will be called to order on Wednesday, April 24, at 11 A. M. and 2.30 P. M. and on the 25th at 10.30 A. M. and 2.30 P. M. Gov. Foss and Richard C. McLaurin, president of the Institute of Technology, will deliver the addresses of welcome. Senator Weeks has also given a conditional acceptance to an invitation to address the association on this occasion. In addition to the annual address of President Greene, papers are expected on the following subjects:

Beam Dyeing, the Modern Method. Centralized Power Plants. Cotton Growing in the Anglo-Egyptian Sudan. Cotton Mill Accounts. Dyeing from Different Solvents. Economy in Lubrication. Economy of Superheated Steam. Importance of Closer Touch Between the Executives and Operatives in Mills. Moisture in Cotton and Cotton Fabrics. Cooperation Among Manufacturers. Spinning Values of Different Grades of Cotton. Tare in Cotton. Tests of Yarn and Cloth. The New Agriculture in the South and Its Relation to the Spinning Industry. Wastes in Cotton Manufacture. Wastes of Supplies Used in Cotton Manufacture.

The earliest English patent dealing with the subject of wool combing is that of Isaac Mills, of Belluton, in Somersetshire, who, in the year 1723, had a patent granted to him for an "instrument for heating combs for combing and pressing wool."

The Underwood Cotton Schedule.

Last month we made an examination of the yarn count as a basis for the cotton cloth tariff and offered some suggestions for the improvement of this method as proposed in the Underwood cotton bills of 1911 and 1912 and in the Parker schedule recommended to the Ways and Means Committee in January by the American Cotton Manufacturers' Association. The idea of adjusting the ad valorem rates of a cloth tariff to the yarn count was more or less of a novelty to most people in the cotton trade, but as a matter of fact the tariffs on cotton cloth since 1861, with the exception of the eleven years from 1883 to 1894, have been based on the weight of the cloth and number of threads per inch, and, therefore, indirectly on the size of the yarn. The elaborate system of classifications on this basis in the Payne bill first appeared in the Wilson bill of 1894 and has been in force ever since.

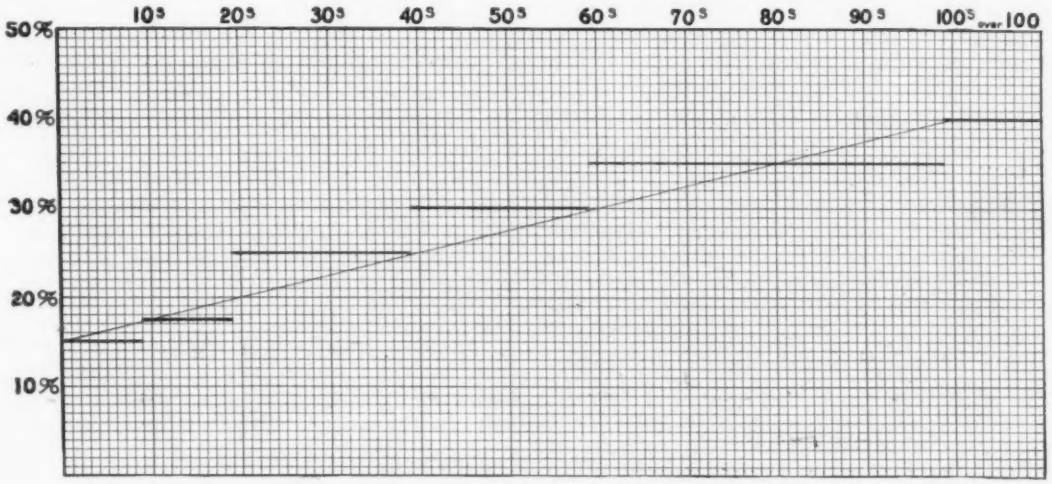

Fig. 1. Showing the Parker step-ladder system of tariff rates and the progressive method as applied to grey cotton cloth, fancy weave and ply yarn. The yarn counts are marked at the top; the ad valorem rates at the left. The heavy horizontal lines show the Parker rates. The diagonal line shows the progressive method.

The Payne tariff, for example, provides that grey cotton cloth over 50 and not over 100 threads per inch, with not more than 6 square yards per pound, and valued at not more than 7 cents per square yard, shall be subject to a duty of 1 cent per square yard. That means that cotton cloths with not more than 100 threads per inch and made with yarn not finer than 26s shall be subject to the rate given. While the yarn count as a basis for a cotton cloth tariff is not new, it finds a very awkward and complicated application in the Payne and previous tariff laws. The Underwood bill greatly simplifies the system by basing the ad valorem rates directly on the yarn count, giving a schedule much easier to understand and far less difficult to administer, and making it possible to secure a regular graduation of the rates to increases in the cost of the yarn.

The two suggestions we made last month, which were designed to perfect the Underwood plan were as follows:

1. Base the classifications on the yarn count as found in the finished cloth, without allowance for take-up or for changes in preceding processes of manufacture.
2. Make any progressive increase in the rates in proportion to the increase in the yarn count, eliminating dividing lines.

It would be exceedingly unfortunate if the marked improvement in the Underwood method, as compared with the Payne and previous cotton schedules, should be lost, even in part, by involving the administration of the law in attempts to accomplish the impossible, that is, to determine, not what the

count of the yarn actually is in the cloth, but what it was when spun and before being woven.

THE WEATHER AND THE COTTON TARIFF

Having adopted the count of the yarn as found in the cloth, as the basis for the rates on cotton cloth, there remains in this connection one point to be settled in order to perfect the administration of the law, namely the atmospheric condition under which the yarn count is to be determined. Owing to the variable capacity of cotton to absorb moisture from the air (or, to speak more correctly, space) under different conditions of temperature and humidity, the count of cotton yarn, that is, the length of one pound of yarn, varies considerably from season to season and even from day to day. Air at a temperature of 90° F., which is frequently encountered in summer, can carry 14.8 grains of water to the cubic foot. At 70° F. it can carry 8 grains per cubic foot. At zero, however, air can carry only 1/2 grain of water per cubic foot. Assuming that the room in which the yarn count is to be determined is heated to 70° F. in winter, that the temperature outside is at zero and the air is carrying 1/4 grain of water per cubic foot or 50 per cent. of its total water-carrying capacity at zero, it follows that the air inside the room is carrying only 3 per cent. of its total water carrying capacity, 8 grains per cubic foot, at 70° F. In other words, the relative humidity inside is 3 per cent. at a temperature of 70° F. It is not unusual for the relative humidity to rise to 90 per cent. at the same temperature, 70° F., during July and August, so that with the ordinary atmospheric conditions under which the yarn count is determined the relative humidity may easily vary from 3 per cent. in winter to 90 per cent. in summer.

Such a change would mean a wide variation in the cotton yarn count. At 70° F. and a relative humidity of 3 per cent. the weight of cotton would consist approximately of 100 parts cotton and 1 part water. At the same temperature and a relative humidity of 90 per cent., on the other hand, the weight of the same cotton would consist of 100 parts cotton and 11 7/8 parts of water, an increase of 10 3/4 per cent. The effect of this variation on the tariff is obvious. A grey cotton cloth of ply yarn, in which the count is 64s when tested in winter at 70° F. and a relative humidity of 3 per cent., would bear a rate of 35 per cent. ad valorem under the Parker schedule. The same cloth if imported say in July and tested at a temperature of 70° F. and a relative humidity of 90 per cent., would show the yarn count to be slightly less than 58, and as a result the Parker rate would drop to 30 per cent. ad valorem. Even under the progressive plan indicated by the diagonal line in Fig. 1, this change in the relative humidity would reduce the rate from 30 3/4 per cent. in winter to 29 1/4 per cent. in summer.

The effect of the weather on a tariff based on the yarn count is so important that it deserves to be illustrated by actual and not assumed conditions. Accordingly we obtained from the United States weather bureau station in the post office tower at Boston a record of the temperature and relative humidity at that point for a series of years, and will give the figures for a number of dates to illustrate the resulting variation in the count of cotton yarn.

For the sake of clearness let us take for illustration a grey cloth, fancy weave and ply yarn, in which the count of the yarn is 60s when the cotton contains the standard amount of moisture, 8 1/2 parts to 100 parts of dry cotton. On July 14, 1911, at Boston with the thermometer at 73° and the humidity at 46 per cent., the yarn count in this fabric would have been 61.3 and the tariff under the Parker schedule would be 35 per cent. ad valorem. Three days later, on July 17, the temperature dropped to 68°, the humidity rose to 97 per cent. and as a result the yarn count dropped to 57.4 and the Parker rate on the same cloth would have been cut to 30 per cent. ad valorem without agitation, committee hearings or act of Congress. Only once during this month, on the 7th, is the count at the standard, 60s. The rest of the time it is fluttering from the lowest, 57.4, on the 17th, to the highest, 61.8, on the 13th, a variation of 4.4 counts, the average count for the entire month being 60.1, which is very close to the standard.

Suppose now that the same cloth had

been tested six months later, in January, 1912, in the same city, with the temperature outside ranging from 5° below zero on the 13th, to 49° above on the 19th, and with the room in which the tests are made heated to 70°. On the 8th, with the thermometer at 8° and a relative humidity of 62 per cent. outside, the yarn count would have stood at 64 1/2 inside. The next day, the 9th, the temperature and relative humidity outside rose to 45° and

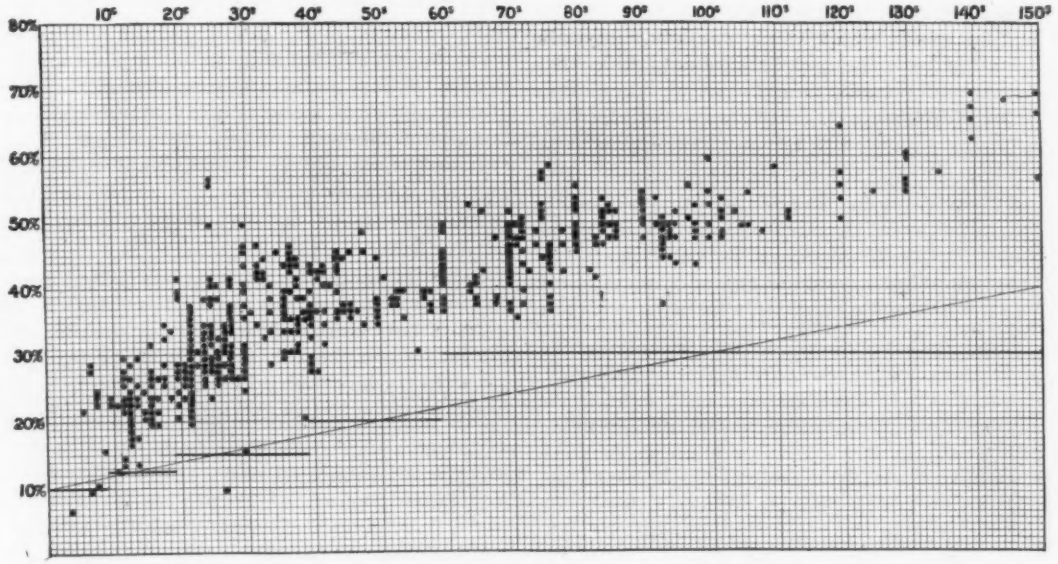

Fig. 2. The conversion cost (percentage of the total cost) and yarn counts of 737 grey cotton cloths, plain weave and single yarn, as reported by the Tariff Board. The black circles indicate one or more fabrics having the yarn count as shown at the top of the chart, and the conversion cost as shown at the left. The heavy horizontal lines indicate the Parker step-ladder adjustment of ad valorem rates shown at the left for this class of goods. The diagonal line illustrates our progressive method of adjusting the ad valorem rate to the yarn count.

93 per cent., and the yarn count dropped to 61 1/2. On the morning of the 19th, the yarn count was 61.3; on the evening of the same day it was 63.4. The count of the yarn ranged from the lowest, 61.3, on the 19th, to the highest, 64.7, on the 6th, a variation of 3.4 in the yarn count as a result of the changes and temperature and relative humidity. At no time during this month did the count reach the standard, 60s, but remained constantly above it, the average being 64. It is clear that the variation during this month as in the preceding July would have caused a constant change from day to day in a tariff based on the yarn count. It is equally clear that cotton cloth in which the yarn count was, say 58, under the average atmospheric conditions in July, 1911, would during that month have averaged just below the Parker dividing line and been subject to a duty of 30 per cent., while under the average atmospheric conditions of January, 1912, the same cloth would on the average have been subject to the higher rate of 35 per cent., because during the last named month the count averaged 61.7.

REGULATING TEMPERATURE AND HUMIDITY

Although the weather has such important effects on a cotton tariff based on the yarn count, the remedy for the difficulty is readily applied, and consists in determining the yarn count under uniform conditions of temperature and humidity. This can be readily done by installing temperature and moisture regulating apparatus in the testing rooms of the custom houses, and adopting rules for the tests of cotton yarn and cloth. Apparatus for regulating temperature humidity has been brought to a high degree of efficiency, the following extract from the handbook of the Manchester (Eng.) Testing

House, explaining the method used by that establishment:

> When the humidity of the air is above or below that required in the testing laboratory, moisture is removed from, or added to, the incoming air. If the temperature is above or below that required, the air is cooled or heated as it passes through the plant. The heating is effected by steam coils, and the cooling, by the evaporation of atomized water.

Such regulating apparatus is necessary not only for the proper administration of a cotton tariff based, like the Underwood bill, directly on the yarn count, but also for the Payne tariff, under which it is easily possible for ordinary changes in atmospheric conditions to transfer cotton goods from one classification to another by reason of the change in the weight and consequently in the number of square yards per pound. We are informed by the officials at the Boston custom house that cotton cloths are tested now for tariff purposes without regulating the temperature or humidity, and we suggest not only that the coming Underwood cotton tariff shall provide for such regulation, but that the Treasury Department immediately take steps to reform the slack conditions prevailing in the customs service at the present time.

If the Underwood cotton bill is based on the count of the yarn as found in the cloth, and if in addition rules are enforced for determining the yarn count under fixed conditions of temperature and humidity, the cotton schedule will afford a simple, easily understood and entirely practicable method for assessing tariff rates on all ordinary cotton cloths, excluding, of course, such special fabrics as plushes, velveteens, corduroys, curtains and possibly lenos, which have an abnormal amount of take-up, and the most of which are already placed under separate paragraphs.

CONVERSION COSTS AND TARIFF RATES

We come now to the consideration of the step-ladder and progressive methods of adjusting the ad valorem rates to the yarn count. The objections to the dividing lines under the step-ladder method and the ease with which these objections could be removed by making the rates progress with the increase in the yarn count are generally recognized in the trade and it is therefore unnecessary to discuss these particular points now. A feature of the yarn count as a basis for the cotton cloth tariff that deserves more attention than it has received in the discussion of the cotton schedule is the exact relation between the step-ladder or progressive rates and the cost of converting cotton into cloth. In both the Underwood and the Parker schedules the ad valorem rates increase as the value of the goods increase. Whatever may be the professed object, the effect of this is to adjust the tariff to protective requirements because the conversion cost of cotton goods shows a fairly constant tendency to increase with the total cost, in marked contrast with wool goods, which, while exhibiting no uniformity of tendency, frequently exhibits a marked increase of the conversion cost in low-priced goods.

In order to illustrate the relation between the rates based on the yarn count and conversion cost of cotton goods, we have used the cost estimates given by the Tariff Board for 1,285 cotton cloths, as given in Table 215 of the Board's report on the cotton schedule. These estimates have no bearing on the difference between the foreign and domestic cost of production. They are, as we understand it, estimates of cost of cotton cloths made in American mills, and calculated by the Board's agents in accordance with a uniform method. Regardless, therefore, of their absolute accuracy, taken in the aggregate they illustrate the relative increase or decrease of the conversion cost of cloths made with different sizes of yarn. With this object we separated the estimates for the 737 cloths made of single yarn in the grey, and classified them according to conversion cost (percentage of the total cost) and the highest yarn count found in each fabric.

The results are shown at Fig. 2. Each black circle represents one or more cloths for which the conversion cost is given at the left of the table, and in which the count of the finest yarn is given at the top. For example the conversion cost of the cloths in which 20s was the finest count ranged from 21 to 42 per cent. of the total cost. The heavy

horizontal lines indicate the Parker step-ladder ad valorem rates, while the diagonal line shows the progressive method of adjusting the rates to the count, the progressive increase being continued beyond 100s because there is no good reason why it should stop at that point. An examination of this distribution of yarn counts and conversion costs fails to show any exact correspondence with either the step-ladder or progressive lines. The conversion cost varies widely for different fabrics made with the same size of yarn. For example, from 16 per cent. to 50 per cent. for the cloths made with 30s yarn; from 20 per cent. to 38 per cent. for the goods made with 22s yarn; from 51 per cent. to 65 per cent. for the fabrics made with 120s yarn. While there are these wide fluctuations in the conversion cost of cotton cloths made with yarn of the same count, the chart shows plainly a fairly constant upward tendency of the conversion cost as the yarn becomes finer, and it is in this fact that the Underwood method of basing the rates on the yarn count finds its justification.

THE AVERAGE YARN COUNT

One feature of the Underwood plan that appears open to criticism is the basing of the ad valorem rate on the highest count found in the cloth. The bulk of some cotton fabrics may consist of a medium or coarse yarn with a very small quantity of very fine yarn used for decorative purposes. Under the Underwood bill of 1911 and 1912 such goods would be subject to the rate based on the finest yarn. When two or more sizes of yarn are found in the same fabric it would seem as if the average size might well be taken as a basis for the Underwood tariff rate. Take, for example, the progressive line in Fig. 2 and a cloth made with 50s warp and 80s filling, with the same set in both warp and filling. The average count of both warp and filling is 65s. Based on the size of the warp yarn the tariff rate would be 27 1/4 per cent. ad valorem; on the filling count, 34 3/4 per cent.; and on the average count, of both warp and filling, 31 per cent. As far as the theory of the Underwood yarn count is concerned it would seem as if the reduced cost of spinning 50s would offset the increased cost of spinning 80s, making the average, 65s, the logical basis for the rate.

A PERMANENT BASIS FOR THE COTTON SCHEDULE

Basing the rate on the finest count would not only involve serious difficulty in determining the count of the finest yarn when it was found in very small quantity, but it would be a practical abandonment of the principle of the yarn count tariff plan and might subject the bill to criticism resulting in continued agitation of a question that should now be settled right. With the yarn count basis adopted and, as seems probable, operating satisfactorily, succeeding Congresses could retain it as a standard while adjusting the lines up or down to suit the necessities of the revenue or the need for protection.

THE UNDERWOOD TEXTILE SCHEDULES

On April 7, Hon. Oscar W. Underwood, chairman of the Committee on Ways and Means, House of Representatives, introduced House bill 10 to revise the duties on imports. The schedules of greatest interest to our readers are those relating to textiles, and accordingly we give the following abstract of them:

SCHEDULE I—COTTON MANUFACTURES

Cotton yarn:

Nos. 1 to 9	5	per cent.
Nos. 10 to 19	7½	per cent
Nos. 20 to 39	10	per cent.
Nos. 40 to 49	15	per cent.
Nos. 50 to 59	17½	per cent.
Nos. 60 to 99	20	per cent.
Nos. 100 and over	25	per cent.

Card laps, sliver or roving, 10 per cent.
Cotton waste, 5 per cent.
Spool thread, 15 per cent.
Cotton cloth, grey:

Yarn Nos. 1 to 9	7½	per cent.
Yarn Nos. 10 to 19	10	per cent.
Yarn Nos. 20 to 39	12½	per cent.
Yarn Nos. 40 to 49	17½	per cent.
Yarn Nos. 50 to 59	20	per cent.
Yarn Nos. 60 to 99	22½	per cent.
Yarn Nos. 100 and over	27½	per cent.

Cotton cloth, bleached, dyed, printed, jacquard figured or mercerized, 2 1/2 per cent. above grey rates.
Cloths of cotton and silk, in which cotton is material of chief value, 30 per cent.
Handkerchiefs, 30 per cent.
Clothing, 30 per cent.
Collars and cuffs, 25 per cent.

Plushes, velvets, velveteens and corduroys, 40 per cent.
Curtains, table covers, tapestries and jacquard upholstery goods, 35 per cent.
Stockings not otherwise provided for, 20 per cent.
Fashioned hosiery, valued at not more than 70 cents per dozen, 40 per cent.; valued at more than 70 cents per dozen, 50 per cent.
Gloves, 35 per cent.
Shirts and drawers, 25 per cent.
Narrow fabrics, 25 per cent.
Belting, 15 per cent.
Table damask, 25 per cent.
Towels, doilies, bath mats, quilts, blankets, sheets, etc., 25 per cent.
Lace curtains, not more than 6 points per inch, 35 per cent.; more than 6 and not more than 8 points, 40 per cent.; nine points and above, 45 per cent.

SCHEDULE J—FLAX, HEMP AND JUTE

Flax, not hackled, 1/2 cent per pound.
Dressed line flax, 1 1/2 cents per pound.
Flax tow, $10.00 per ton.
Hemp and hemp tow, 1/2 cent per pound.
Line of hemp, 1 cent per pound.
Jute yarn: singles, not above 5 lea, 15 per cent.; singles, above 5 lea, 25 per cent.
Cordage, of istle, Tampico fiber, manila or sisal, 1/2 cent per pound.
Hemp cordage, 1 cent per pound.
Twine of flax, hemp or ramie, not above 5 lea, 25 per cent.; above 5 lea, 30 per cent.
Yarn of flax, hemp or ramie: single, not above 8 lea, 15 per cent.; above 8 and not above 80 lea, 25 per cent.; above 80 lea, 10 per cent.
Nets of flax, hemp or ramie, 30 per cent.
Mattings, straw, with cotton, hemp or other vegetable warp, 2 1/2 cents per square yard.
Carpets and rugs of flax, hemp or jute, 35 per cent.
Hydraulic hose of cotton, flax, hemp, ramie or jute, 7 cents per pound.
Tapes, flax, for measuring tapes, 25 per cent.
Linoleum, 30 per cent.; inlaid, 35 per cent.
Oilcloth, 15 per cent.
Collars and cuffs, linen, 30 per cent.
Narrow fabrics of flax, hemp or ramie, 30 per cent.
Wearing apparel of flax, hemp or ramie, 50 per cent.
Woven fabrics, of single jute yarn, 25 per cent.
Pile fabrics, of flax, 45 per cent.
Bags, jute, not dyed, printed or bleached, 25 per cent.
Handkerchiefs, not hemmed, of flax, hemp or ramie, 35 per cent.; hemmed, 40 per cent.
Woven fabrics of flax, hemp or ramie: weighing 4 1/2 ozs. or more per sq. yd., 50 per cent.; less than 4 1/2 ozs. per sq. yd., 30 per cent.
All woven articles, of flax, hemp, ramie or other vegetable fiber, not specially provided for, 40 per cent.
Istle or tampico, dressed, dyed on combed, 20 per cent.

SCHEDULE K—WOOL AND MANUFACTURES OF

Wool of the sheep and hair of the camel, Free.
Noils, wool wastes, shoddy, flocks, etc., Free.
Tops and Roving, 15 per cent.
Yarns, 20 per cent.
Cloths, knit fabric and felts not woven, dress goods and clothing, 35 per cent.
Blankets and flannels, 25 per cent.
Flannels, valued above 50 cents per pound, 35 per cent.
Narrow fabrics, 35 per cent.
Aubusson, Axminster, moquette and chenille carpets, 35 per cent.
Saxony, Wilton and Tournay velvet carpets, 30 per cent.
Brussels carpets, 25 per cent.
Velvet carpets, 30 per cent.
Tapestry Brussels carpets, 20 per cent.
Treble ingrain carpets, 20 per cent.
Wool Dutch and two-ply ingrain carpets, 20 per cent.
Rugs, woven whole for rooms, 50 per cent.
Druggets and backings, 20 per cent.
Hair of the Angora goat, 20 per cent.
Tops of mohair or alpaca, 25 per cent.
Yarns of mohair or alpaca, 30 per cent.
Cloths of mohair or alpaca, 40 per cent.
Plushes, wholly or in part of mohair, 50 per cent.

SCHEDULE L—SILKS AND SILK GOODS

Carded or combed silk from cocoons or waste silk, and noils, 15 per cent.
Spun silk yarn, 35 per cent.
Thrown silk, 15 per cent.
Pile fabrics, 50 per cent.
Handkerchiefs, not hemmed, 40 per cent.; if hemmed, 50 per cent.
Ribbons, 40 per cent.
Clothing and knit goods, 50 per cent.
Woven fabrics, 45 per cent.
Yarns, of artificial silk, 35 per cent.
Articles and fabrics of artificial silk, 60 per cent.

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WARPING WOOL AND SILK

Editor Textile World Record:

Can you tell us the best method of warping wool and silk for a silk stripe so as to avoid cockling in the finished goods? It seems to us that where the two are warped together in the ordinary way that the silk seems shorter than the wool warp and draws a little, causing cockled goods. Jackson (2120).

I would not advise the warping of wool and silk on the same beam. Silk should always be put on a separate beam to get the best results. Not knowing the weave that is being used it is difficult to answer this inquiry intelligently. If an ordinary four harness twill is used and the silk weaves tighter than the wool, care should be taken when dressing the silk and wool warp, where they are put on the same beam, to use less friction on the silk spool. If the dresser tender is using the same weight on both the silk and wool spools, this, no doubt, is causing the cockles in the goods. The silk should be run with as small a weight as possible so the silk will run a little slack, but not so slack as to cause it to kink when weaving.

Greenwich.

The Revision of the Textile Schedules

The textile schedules of the Underwood bill are in conflict with the Baltimore platform and with the public pledges made by Woodrow Wilson before and since his election as President of the United States. The Democratic platform contains this pledge:

> We recognize that our system of tariff taxation is intimately connected with the business of the country, and we favor the ultimate attainment of the principles we advocate by legislation that will not injure or destroy legitimate industry.
>
> We denounce the action of President Taft in vetoing the bills to reduce the tariff in the cotton, woolen, metals and chemical schedules, and the farmers' free list bill.

Gov. Wilson made this statement at Pittsburg during the presidential campaign:

> The business men of the country owe it to themselves to face the facts as they are and to meet them in a spirit of accommodation which has no touch either of radicalism or of mere theoretical reconstruction in it.
>
> The Democratic party does not propose free trade or anything approaching free trade. It proposes merely a reconsideration of the tariff schedules such as will adjust them to the actual business conditions and interests of the country. . . .
>
> Their desire is not to check, but to aid, not to embarrass, but to quicken. They will not undertake the task like amateurs, either. They will seek and obtain the best possible advice in the country, but they will seek it far and wide, and not only in the quarters from which it has usually come.

The two principal schedules of the textile tariff are those relating to cotton and wool, and in these two is found the most violent conflict between the Underwood bill and the party pledges.

THE COTTON SCHEDULE

For months previous to the framing of the new Underwood bill the cotton manufacturers of the country, as represented by the American Cotton Manufacturers' Association, followed Candidate Wilson's advice to the letter, cooperating with the Democratic members of the Ways and Means Committee, accepting in a spirit of unqualified accommodation the Democratic principle of ad valorem duties, and recommending a schedule of rates on yarn and cloth that was the result of careful and long-continued exercise of the best judgment of practical manufacturers, not one of whom has ever, to our knowledge, been identified in the past with the manipulation of tariff rates to secure special privilege. They are all men of high standing. Many, if not all of them, were life-long Democrats, a fact that should not at least arouse prejudice among the majority members of the present Committee on Ways and Means. Their conclusions were presented to the Committee in the form of what is popularly known as the Parker cotton schedule, which provided for ad valorem rates far below the ad valorem equivalents of the Payne compound duties on cotton goods. Notwithstanding the fact that these duties were not only ad valorem, but relatively very low, the Committee has reported a bill that provides for duties materially lower than the Parker schedule, and in some cases actually lower than the Underwood rates of 1911 and 1912. It is not possible for any man or body of men to determine in advance of a trial the exact effect of a tariff schedule. And it is not claimed that the Parker schedule is perfect. In an article entitled "The Underwood Cotton Schedule," which appears in this issue, we have shown how the classifications and administrative provisions of both the Parker and Underwood cotton schedules can be materially improved. But so far as the level of rates is concerned the Parker recommendations represent the best judgment in the trade as to the extent that Congress can safely go in reducing the tariff on cotton yarn and cloth. The law-makers who disregard such recommendations, while well within their constitutional rights and duty, exhibit a reckless disregard of consequences that stamp them as unfitted to meet the responsibilities of legislation. Such a sudden cut from high protection to a low revenue tariff cannot fail to injure legitimate industry, and the conclusion is unavoidable that the Ways and Means Committee in framing the Underwood cotton schedule, have broken the pledge in the Baltimore platform and the Pittsburg promise of Gov. Wilson that his party would not undertake the task of tariff revision like amateurs.

THE WOOLEN SCHEDULE

It is, however, in the Underwood woolen schedule that we find the sharpest conflict with the party platform and the pre-election promises of the candidates. In another part of this issue, in commenting on "Worsted Serges from Yorkshire," we call attention to the artificial conditions under which the American wool growing and wool manufacturing industries have been carried on for nearly fifty years, and show how poorly prepared American wool manufacturers are to meet the competition of foreign mills. This state of unpreparedness is due wholly to laws enacted and enforced by the United States government. Because of that fact it is the duty of the government to make changes gradually, giving the American wool growing and wool manufacturing industries an opportunity to adjust themselves to altered conditions resulting from a revision of the tariff. But what does the Ways and Means Committee propose? In the case of wool the Underwood bill at one stroke wipes out duties on raw material ranging from 30 per cent. to 700 per cent. and substitutes nothing in their place. The Underwood wool tariff is not only unfair and dangerous, but in some respects it is grotesque in its absurdity. An example of this is found in the provision for a duty of 20 per cent. on mohair, and rates ranging from 25 to 50 per cent. on mohair tops, yarns, cloth and plush. How is a net protection of 7 per cent. on mohair tops reconciled with a net protection of 15 per cent. on wool tops? How is a net protection of 7 per cent. on wool tops in the Underwood bills of 1911 and 1912 reconciled with a net protection of 15 per cent. on wool tops in the Underwood bill of 1913? Why free trade for the wool grower and protection for the producer of goat hair in a bill designed to meet the pledges made by Woodrow Wilson and the Democratic party before they were intrusted with power by a minority of the voters of the United States? So far as wool is concerned, what becomes of the Democratic platform pledge not to injure or destroy legitimate industry? What becomes of Gov. Wilson's assurance that the Democratic party does not propose anything approaching free trade? How is free wool in the Democratic bill of 1913 reconciled with a 20 per cent. duty in the Democratic bills of 1911 and 1912? How is free wool reconciled with any duty on wool goods?

Coming now to the proposed tariff on wool manufactures, we find the Underwood bill proposing a duty of 35 per cent. ad valorem for the present complicated, excessive and inequitable system of compound duties whose equivalents vary from 80 to 300 per cent. Making a fair allowance for the amount required to compensate for the present wool duties, we find that the Ways and Means Committee propose to substitute a duty of 35 per cent. ad valorem for rates that now vary from 50 to 250 per cent. Nor is there any provision whatever for postponing the operation of the tariff on manufactured goods until the mills have had an opportunity to work off the vast quantity of raw material that is necessarily on hand, but all duties are to go into effect on the day following the passage of the Act.

The meaning of such changes is clear to everyone familiar with wool manufacturing. It is our deliberate judgment that such a change would prove of serious damage to the American industries. We are far from denying that in the course of time the woolen and worsted industry with a net protection of 35 per cent. will not become able to compete successfully with foreign mills. The point we wish to emphasize is that the change from the unequal specific duties to the equitable ad valorem tariff in itself will bring competition that the American trade is not only unprepared to meet, but with which American manufacturers have had no opportunity to become familiar. If on top of this and in addition to this the ad valorem rate on goods is suddenly fixed at a point that should be reached only after the lapse of several years, then it is certain that the change will prove disastrous to both labor and invested capital. These facts leave no escape from the conclusions that, not only free wool, but the sudden change to 35 per cent. on goods is in violation of the Democratic platform and of Gov. Wilson's promises that the tariff would be revised so

as "not to check, but to aid, not to embarrass, but to quicken."

HOW THE TEXTILE SCHEDULES WERE FRAMED

In what we have thus far written we have assumed that the Underwood wool and cotton schedules represent the deliberate judgment of the Ways and Means Committee acting for the House of Representatives. But is this a fact? The Democratic House of Representatives of the 62nd Congress twice originated and passed bills providing for a duty of 20 per cent. on wool. Twice the House agreed to a compromise with the Senate by which that rate was increased to 29 per cent., and once it actually passed such a bill over the veto of the President. There was no promise of free wool in the Democratic platform of 1912, nor in the speeches of the party leaders. That platform denounced the action of President Taft in vetoing these Democratic bills which provided for a tariff on wool. The country expected, and since the election it has been generally understood, that a duty was to be placed on wool. A few days before the Underwood bill was reported, the press despatches from Washington announced that the Committee had agreed on a duty of 15 per cent. on wool. Next it was stated that the measure as framed by the Committee had been submitted to the President for "suggestions." Then came the bill itself with no duty whatever on wool.

Such a series of events alone justify the belief that the executive branch of the government was doing that which our constitution was expressly designed to prevent, the encroachment of the executive on the rights and powers of Congress. This belief finds strong confirmation in evidence that the Committee itself has supplied. The Underwood bill as introduced and printed on April 7, did indeed place wool and wool by-products on the free list. It happened, however, that the Committee not only printed the bill as introduced with its free wool paragraph, but also issued at the same time an 816-page volume entitled "Tariff Handbook. Statistical Basis for H. R. 10, 63rd Congress, 1st Session." It contains a copy of the Underwood bill and the carefully compiled statistics of imports under previous tariffs, with an estimate of the revenue under the proposed bill. This large volume must necesarily have been printed several days before the bill was actually introduced, and it follows that in case of a discrepancy the volume would be the more accurate record of what the Committee recommended before the measure was handed to the President, while the bill as introduced would be in the form approved by the President. Bearing in

654. Wool of the sheep, hair of the camel, and other like animals, and all wools and hair on the skin of such animals, fifteen per centum ad valorem.

655. All noils, top waste, card waste, slubbing waste, roving waste, ring waste, yarn waste, bur waste, thread waste, garnetted waste, shoddies, mungo, flocks, wool extract, carbonized wool, carbon-

From page 313 of the "Tariff Hand Book," showing how the Ways and Means Committee decided to revise the tariff on wool before the President interfered.

654. Wools, etc., unmanufactured.

Item.	Wilson tariff.	Dingley tariff.	Payne tariff.		Estimates for a 12-month period under H. R. 10.
	1896	1905	1910	1912	
Imports:					
Quantity (pounds)	228,647,543	211,287,482	256,606,638	193,770,722	.....
Value	$32,144,454	$35,444,449	$47,687,293	$33,141,408	$60,000,000
Average unit	$0.140	$0.168	$0.186	$0.171	.....
Duties	.....	$16,329,987	$21,128,729	$14,454,234	$9,000,000
Equivalent ad valorem (per cent).	Free.	46.64	44.31	43.61	15.00

From page 391 of the "Tariff Hand Book," showing how the Ways and Means Committee decided to revise the tariff on wool before the President interfered.

mind that the bill as introduced provided for free wool, we call attention to the accompanying photographic reproductions from two pages of the "Handbook."

Fig. 1 is paragraph 654 and part of paragraph 655. Fig. 2 is the statistics of wool imports and the estimated revenue under the Underwood bill. Both call for a duty of 15 per cent. ad valorem on wool. So suddenly and hastily were the changes made in obedience to a higher power, that the wool paragraph and the statistical table were left in the "Handbook" as the Committee originally decided, with a duty of 15 per cent. ad valorem on wool.

THE CONSTITUTIONAL METHOD OF TARIFF REVISION

These exhibits leave slight chance for escape from the conclusion that, so far as the wool duty is concerned, H. R. 10 is not the bill that the Ways and Means Committee would have framed if left free to exercise the constitutional power of the House to originate revenue measures. That power is given to the House of Representatives by Art. 1, Sec. 7 of the Constitution which provides:

> Every bill which shall have passed the House of Representatives and the Senate, shall, before it becomes a Law, be presented to the President of the United States: if he approve he shall sign it, but if not he shall return it, with his objections, to that House in which it shall have originated, who shall enter the objections at large on their Journal, and proceed to reconsider it. If after such reconsideration, two-thirds of that House shall agree to pass the bill, it shall be sent, together with the Objection, to the other House, by which it shall likewise be reconsidered, and if approved by two-thirds of that House, it shall become a Law.

That section of the Constitution means, if it means anything, that in framing revenue measures, the House of Representatives shall represent the people, free from dictation or duress from any source whatever, whether coming from special interests seeking tariff favors or from a powerful executive armed with the club of patronage and bent on applying an economic theory to the affairs of 100,000,000 people.

FAIR PROTECTION TO AMERICAN INDUSTRY

In view of the inequitable nature of the rates proposed by the Underwood bill, in view of the injury that this measure will cause to both wool growing and wool manufacturing, in view of the remarkable and irregular methods by which it has been framed and given to the country, in view of the fact that this bill has never been properly considered by a committee of the House that is expected to pass it, in view of the well founded belief that it is a bill, not of the House of Representatives, but of the White House, which has no constitutional right to interfere in the framing of revenue measures, this Underwood-Wilson bill should be recommitted to the Committee on Ways and Means in order that the tariff may be revised in an orderly manner so as to injure no legitimate industry. If, however, this course is not adopted, if this bill reaches the Senate in anything like its present form, it will be the duty of Senators regardless of party affiliations to stand firm for a revision of the textile schedules in accordance with the overwhelming sentiment of the American people in favor of a tariff that is fairly protective, free from special privilege, and based on the principles stated in the United States Senate by Jonathan P. Dolliver on Aug. 5, 1909, the day the Payne-Aldrich bill became a law:

> The citadel of protection is in the judgment and good sense of the American people from one ocean to the other. The citadel of protection is the right which every producer who invests his labor or his money in an industrial enterprise has of living without being disturbed either in his employment or in his reasonable profit by the competition flowing into our market place from other lands. That is the citadel of protection, which I shall defend in the future, as I have in all the years of my life, against all its enemies.

The number of sheep in Germany has steadily decreased. In 1860 there were 28,016,769 sheep; in 1900 there were 9,692,501 sheep, and in 1907 there were 7,703,710

The world's consumption of American cotton for the year ending August, 1911, is estimated at 11,559,401 bales, and the consumption of all kinds of cotton is given as 17,819,070 bales.

Marketing the Wool of the United States

BY WANAMINGO

The method of marketing the wool clip of the world, and, in a smaller way the clip of the United States, is a matter to which the consumer gives little or no thought, and he cares very little about it so long as the finished product is ready for service in the form of clothes when he is ready with the price. But the marketing of this, one of the world's principal products, from the time the wool is shorn from the sheep until it reaches the hands of the manufacturer, makes an interesting story and one scarcely realizes the amount of energy, capital and the number of people who have had a hand in its progress toward a bolt of cloth, a carpet or a suit of clothes.

A GROUP OF WOOL GROWERS AND BUYERS AT MILES CITY, MONTANA

Some may think that each fleece from the 615,851,057 sheep, which it is estimated constitute the sheep flocks of the world, might be as white as snow and sold over the counter tied with ribbons. The process is wholly different and varied with the country and people wherein the business is carried on. The most antiquated and dangerous methods are used in the United States in the buying of the product of our 39,000,000 sheep. The bulk of the United States clip comes from the country west of the Mississippi River. Wools from this country, with the exception of Montana, are given the trade name of territory wools. Montana wools bear their State name and are sold on a different basis from other territory wools. Wools from the country east of the Mississippi are called fleece wools. The territory wool sheep are range animals and are run in large herds, the business being done on a larger scale than is possible in the more thickly settled eastern country where the sheep are handled in small bunches and housed at night and during cold weather.

Most of the sheep are shorn after lambing, but in some places are shorn before. There is no hard and fast rule about the time of shearing, which is usually fixed to suit the convenience of the owners. The business of the sheep man is not all smooth sailing, as he has at times severe weather conditions to

meet in winter. He may have his entire flock wiped out in one night. Owing to lack of moisture the feed may be so scarce that he will lose heavily through starvation or lack of water. These weather and feed conditions are always taken into consideration by a buyer, because he knows poor feed and water do not produce good sound wool. Where sheep start well, then have poor feed and afterwards good feed again, he will be sure to find a break in the staple. Close observation as to these points keeps the buyer out of trouble. If there has been little moisture then there will be plenty of wind and sand storms, and the wool will be loaded with the dirt, as sheep always head against the wind in feeding or traveling by themselves.

The range conditions make the usual western rates of 10 per cent. for borrowed money seem a fair one when the risks are considered. While the bulk of the banking of the sheep men is done at home, they can sometimes get loans from the wool trade at lower rates. Winter loans to sheep men are common. These loans have a proviso in the mortgage that the people making the loan shall have the first chance to buy the wool when shorn at any price, and that if the clip is sold elsewhere a commission of 1/2 cent per pound shall be paid to the lender. This applies in the districts where sheep men are well known in the East, but it is an obstacle difficult to overcome for anyone trying to break into the business and buying the wool on its merits.

The smaller sheep men who do business on credit or get tied up in the local stores usualy get the short end of things. The storekeeper takes a mortgage on the sheep and outfit, then gives the sheepman a line of credit by which he can take goods on which the storekeeper gets no small profit, besides charging interest on the credit. The sheep, lambs and wool go through the same hands and a profit also sticks to the storekeeper. At times liberal advances are made on large clips by Eastern commission men at interest rates under 10 per cent. with the agreement that the wool is to be consigned to the lender and sold on commission. The rate for selling wool on commission is 1 1/4 cents per pound, but if there is much competition for the clip and the grower is a good trader, he can get the job done for one cent a pound. The consignment of wool to be sold on commission is not a very popular way of disposing of the wool among the sheep men. Many have tried it and the results have not been very satisfactory to them.

The Association Wool Growers' Association was organized several years ago to eliminate commission men and dealers and to sell the wool of the members direct to manufacturers. Most of the members were from Wyoming, but some were from Montana and other States. Each member is a stock holder and under agreement to forfeit a cent per pound on his clip if he fails to ship his wool to the association. The association has offices in Chicago, Boston and Philadelphia. In an ordinary season their agents have had large lots of wool to sell and are a source of worry to the dealers, as they are always afraid the market will be broken by the consignments. The association does not have much wool to sell when the dealers have been excited during the buying season and paid high prices. Then the members forfeit their cent per pound and sell at home and trust to luck for gettng some of the forfeit money back in the shape of a dividend.

The first wools of the domestic clip are shorn in southern Arizona during the latter part of January. The clip amounts to about two million pounds and comes on the market when selections are poor so that as a rule better prices are obtained than the character of the wool warrants. Not many buyers go after these wools in this country. The buyers who have gone there for the past few years find it exceedingly hard to buy, owing to the good results obtained by an eastern commission house which handles the business for a small commission.

March and April mark the opening in Nevada and Utah. Every month up to August sees a new section starting and then as a rule the entire clip has changed hands on a cash basis and the wools are on their way East to the dealers and commission men. The first heavy guns of the buying campaign are usuelly fired about February and March, sometimes earlier, when the bolder spirits in

the trade start their men in Utah and Nevada to contract for wool on the sheep's back. The object is to get as low a grease price as possible and to pay as little as possible in the form of advance money, taking chances that the wools will show a lighter condition than the average. This is a gamble and like all gambles will win large sums of money if nothing goes wrong There are times when the wools come off in a lighter condition than expected and then there is a harvest in which three cents a pound profit on a pound of grease wool would not be considered good business.

In the sections all over the West the buying operations are handled to suit the local conditions. For instance, in Utah most of the sheep men are Mormons and as a rule the houses getting the best results employ men of that faith as buyers. It seems that the higher the position they hold in the church, the more wool they obtain. In most places in New Mexico the local store which holds a club over the small men in the place come next, while in other places the buyer must make long drives to visit the ranches.

In other places, such as Oregon and Montana, large quantities of the staple are sold by sealed bids. As the season opens out the buyers get into their sections and as far as possible make reports to their principals as to conditions, trying to size up the strength of their competitors. At the sealed bid sales where there may be twenty or thirty men operating, there is not much chance to trade, as they are all out for wool. A man must put his best foot forward, bidding right up to his limit. If he finds he is getting all the wool, it will prove to him he is going too strong. Then if he is prudent he will lower his figures until he begins to feel competition.

In private dealing one needs to be, not only an experienced wool man, but a "trader." Men from all parts of the world are interested in Western sheep and the buyer soon learns that all the "traders" are not confined to Yankee land. The growers, although not practical wool men, are not given to asking too little for their wools and at times have such exalted ideas of their value that even the wildest operator can do nothing. In this way the movement of the wools may be held up for several weeks. There are times when the westerner has Eastern conditions sized up wrong and are willing to sell at prices which show profits in the East, so that a few may get some cheap wools. The men frequently get over anxious to secure the lines and force the market up above Eastern values. There is a period every year when wool can be bought cheaper in the East than in the West, as the buyers force prices upon themselves by their eagerness. Their only concern seems to be to keep below the foreign markets. The smallness of the American clip makes it possible for a few large concerns to pool their issues, get control of a large enough percentage of the clip to control the market, and force the manufacturer having to buy large supplies to their ideas of values, sometimes holding the umbrella for smaller houses to unload.

The general buying of the American clip strikes an onlooker as being of a reckless nature. The eagerness to buy and the only partial examination some of the men give to large lines of wool are money losing propositions.

The American clip is probably baled worse than any in the world. This is a matter that should be looked into with great care. After the wool is in the sacks owners do not like to have them slashed. It looks like gambling to see a man invest forty or fifty thousand dollars in a variable commodity like wool after taking a peek into a few small holes cut in a few sacks. Sometimes not even this much is seen. One would suppose that a grower with merchandise to sell would be willing to permit a fair examination to determine its value, but they have found by experience that there are plenty who will take a chance and buy without a good "look in." It is marvelous how some men can state the shrinkage, character and grades of wool that has not been examined. An advancing market helps the careless through, but in a series of dull years the poor buyers make bad matters worse, and it is something of a mystery how the trade can stand for the slipshod and careless handling of the American wool clip.

The sealed bid sales are held monthly in Montana and Oregon. The buyers have an

opportunity to open and examine a number of bags in the sales warehouse. In Oregon the Wool Growers' Association arranges the dates for the sales at the different points throughout the State, and the buyers travel from point to point in a special car in order to insure a market on the given dates. As the clips are offered for sale at the warehouse, a description of the slip is written on a black board giving the number of sacks of ewes, wethers, yearlings and bucks. Sample bags of each kind are opened for the buyer's inspection and after an examination each buyer writes out his bid and hands it to the warehouseman, who after consulting with the owner announces a sale or no sale. This goes on until all the wool in the house is disposed of. Sometimes two million pounds is sold in a day. The buyers then leave the work of baling and shipping to the warehouseman, board their car and are off for the next sale at a point possibly three hundred miles away.

The wool dealers have objected and do object to the presence of buyers for manufacturers at these sales, and by using their superior knowledge of the country have tried to shut the manufacturers out. The dealers also try to get ahead of the manufacturers by buying the wools at private sale and by forbidding their buyers to participate in the sales. The sales, however, were held just the same and most of the dealers came back to the fold, but there were several who keep out all the season and who still frown darkly and get ugly when the manufacturers' buyers come into camp.

The custom of sealed bids will no doubt continue except in seasons when dealers speculate by contracting as freely as they did this year. There was so much contracting done in Montana this year before shearing that by the time the army of regular buyers were on the ground there was a very small part of the clip left unsold. One cause for the apparent looseness with which the American clip is bought in the primary markets is the fact that there is more capital that can be invested in wool in proportion to the size of the wool clip. A dealer with small capital trying to get into the game finds himself working against unlimited capital, and it is rumored that the larger concerns are not at all backward in working a freezeout game, either by forcing prices in districts where a new buyer is trying to break in, or by building back fires with the banks and shutting out lines of credit. The clip has reached the point where a few houses handle the bulk of it and the large lines of staple wools can be found only in a few places. A single buyer at places outside of points at which there are sealed bid sales, cannot buy to advantage much more than a million pounds and he has to keep on the jump to get this as he cannot take on every clip he sees. The buyer when he secures a clip at an outside point, must make his trade so that the wool is delivered free on board the cars. In order to make the trade fast he has to give a draft at the time of purchase for a portion of the purchase price. The amount is regulated by the size of the clip. He must also see that his trade provides for the proper tare, non-payment for sacks and proper discounts for tags, bucks and dead wool. The wool is received either personally by the buyer or his representative and a final draft given for the balance due. The entire wool clip is moved from the West on a cash basis. With the risks in buying, the length of time that elapses before the wools arrive in the East, credit risks in the East and expense of selling, it would seem as if the trade would be entitled to good profits. For the past few years, however, profits have been lean. A year like the present, when it has been all milk and honey for the bold owner, makes them all glad.

After the wool is loaded on the cars, the next profit goes to the railroads. They charge up to 2 1/2 cents per pound in the grease; but even a rate of .0207 1/2 from Nevada or .01 1/2 from Colorado or New Mexico, does not compare very favorably with water rates from South America of $2 for 40 cubic feet, which, reduced to smaller figures, equals 1/4 cent per pound from Buenos Aires or Montevideo. The wools arriving in the seaboard markets from the West are placed in storage as quickly as possible, as the railroad still imposes a penalty for the slow and easy in the form of a demurrage charge.

When carded woolen mills were a larger factor in the wool buying than they are to-

day, very little wool was sold in the original bags. Every clip had to be graded in order that the mills might get just the grade they required. When woolen goods became unpopular it became a question of what would be the position of the shorter staple wools The advance of the French and Belgian systems of combing took care of these short wools, so that now all grades and classes have a ready market. Wools are still graded to a considerable extent, but a large amount is also sold in the original sacks. Wools that run fairly uniform in grade, such as New Mexican, Utah and Nevada wools are offered in the original sacks. The bulk of the New Mexican clip cannot be graded very well, as the custom in that country is not to tie the fleeces. Each fleece is thrown in the sacks untied. After being tramped down, all the bad parts of the fleece become mixed with the better parts and cannot be separated except by mill sorters. There has been some move in parts of New Mexico to tie wools, which would make them more popular. Wools from this section have for years been generally neglected by manufacturers, but a few of them know that some of the finest quality wools grown in the United States come from New Mexico.

Oregon and California wools come on the market packed in bales. Many of the Oregon wools are graded before they leave Oregon, and the different grades are baled separately. The baling was originally for the purpose of saving freight, owing to the high rate for bag wool. During the past year or two there has been a more favorable rate, so we see more bag wool on the market from Oregon. Territory wools are graded when there is enough staple wool in the clips to warrant the expense of handling. The Bradford combing staple will always sell at a higher clean value than the French combing or clothing wools, as they yield and spin better.

The offering of original bag Montana or other territory wool is made by placing a number of sample sacks before the buyer. These sacks are supposed to be of average weight and from a wide range of the clip. The buyer makes a rough grading, based on his mill qualities, estimates the percentage and shrinkage of each grade, thus obtaining the average shrinkage and clean cost. If a trade results the wool is usually approved by examining 10 per cent. of the clip. Some buyers insist on cutting every sack. When it is decided to grade a line of wools, the clips that match best for color and character are selected as a basis for the classification. Each day a part of every clip to be graded is given the graders, and the same ratio is held until the line is complete. This is done to keep the piles as uniform in character as possible. Thus it will be seen that the large piles of wool are made up from many different clips. The grader makes the grades as near uniform as his eye can carry them, after he has been instructed as to how the leading grades are expected to run from the line of wool being graded. As the fleeces are placed on the grading table the grader tries the strength of the staple. His eye tells him the grade and thus determines the character. It is placed in the graders' basket to be thrown later into its proper pile.

In taking the wool from the piles when being sacked it is always taken with the grain to prevent tearing the fleeces. The foreign system of calling the grades by number has advantages over our domestic system, in that there is more of a standard of quality and closer grading is made, although there may be differences of opinion as to just what a particular grade may be. On the domestic wools there is no standard in the trade as to just how any grade must be made.. Each firm makes the grades as they believe they can sell them to the best advantage. Some houses put up their 1/4 blood on the high side, with a percentage of 3/8s or 1/2 blood either on the high or low side. It will easily be seen from this that the clean basis quotations in wool market reports give but a general idea of values, and mean nothing exact, unless one knows the wools sold.

The purchaser of a pile of wool is allowed to pull it down and examine as much as he likes in order to make his valuation. As a rule after his trade is made, he is expected to take the pile as it stands, unless he has made his trade to take only a selection. Otherwise he is permitted to see the wool sacked and perhaps to reject any fleeces that

may be radically wrong. The wool sackers place the packing frames close to the pile and the battery of four sackers will sack forty-five to fifty sacks an hour.

Wool partakes of the character of the country in which the sheep are ranged. This is a rule as relentless as fate and accounts for the different shrinks or yields of the same grade of wool coming from different countries or localities. In a country where there is a good pasturage, the principal shrink is the natural oil in the wool, with the addition perhaps of any vegetable matter that may cling to the fiber. When there is an open range country and dust storms prevail at different seasons of the year, the sheep, which always feed with their heads against the wind, get the dirt into their necks and backs, thus getting an additional shrink into the wools. The shrink or yields that will apply one season will be of no use for the next. Severe cold weather and dry or wet weather in the different places makes the shrinks or yields different each season. The whole subject of estimating the shrink of wools can be boiled down to a matter of experience and judgment of the individual buyer. Merino wool from sheep run in Ohio may shrink 60 to 65 per cent., while the same grade of wool run in New Mexico or Oregon may shrink 70 to 74 per cent. The same rule applies to the wools of other countries. There is no book of rules that can be written to determine the shrink of wools. Dealing in wool is a dangerous business with or without experience. Each lot or clip of wool has different characteristics and must be estimated on its merits. The basis of estimating shrinkage is the grade or fineness of the fiber. It is a fact that the heaviest shrinking wools are the merinos or fine wools. The finer the wool, the shorter the staple, and the heavier the shrink the less the yield. On the other hand the wool shrinks less or yields more as the grade becomes lower. The true basis for an estimate on wool values is its yield in the card ball, i. e., the wool scoured and carded. This leaves the wool which contains the top and noil. In figuring the value of tops, card waste is never taken into consideration except as a shrink. Wool that yields best in card ball are pulled wools, and wools that have a grease shrink only. The greasy, sandy wools make more card waste than pulled and greasy wools. Part of the waste is visible and the other part just disappears and shows up only in the figures. From this it will be seen that the wool yielding the most from the clean wool is the most valuable per scoured pound. This is what makes Montana, Ohio, Michigan and Pennsylvania wools worth more on the clean pound than the wools of Nevada, Utah, Wyoming or New Mexico. The same is true of Australian wools as compared with our domestics. Australian wool yields more and spins to a higher count than the domestics and thus are worth more per clean pound.

The Australian wools which are brought into this country seldom shrink over 52 to 53 per cent. for merinos down to 30 per cent. for the lower grades of cross bred. The New Zealand cross breds which come into this country in large quantities range in shrinkage from 26 to 40 per cent. according to the grades.

The South American wools range from 28 to 38 per cent. according to the grade. Montevideo wools of the Super cross bred variety will shrink from 25 to 38 per cent., and Montevideo merinos from 45 to 55 per cent., according to grade and condition. The Australian, New Zealand and South American wools are all skirted, so these shrinks are estimated on the best parts of the fleeces. Irish wools, which are washed, shrink about 20 to 22 per cent. English wools are a little higher grade and shrink about 25 to 30 per cent. The Americans are obliged to figure about 2 per cent. higher shrink than foreign buyers on foreign wools, owing to a difference in humidity. The United States is less humid than Europe, therefore a higher shrink must be figured.

It should not be imagined that the foreign countries produce only light shrinkage wools. There are foreign wools that shrink as heavy as any in the United States. Carpet wools are in a class by themselves and are not considered in this article.

An interesting sight during a walk through the wool lofts of our domestic market is to see several million pounds in piles and to walk through lanes on each side of which will be a high pile of wool containing

half a million pounds. One of the newest buildings for the handling of wool in Boston is large enough to hold at least half of the wool clip of the United States. Most of the buyers from the West become salesmen when they return home and are, of course, interested in having their purchases sold at a profit. One would hardly realize there could be so many defects in wool until it is shown to some aggressive mill buyer, who can show up faults that one would hardly believe could exist. Buyers for the larger mills are about the market all the time and receive the personal attention of the principal men in the business. The smaller mills are looked after by the traveling salesman. Time was when the buyers for these mills made it a practice to come to market, but of late years the "boys" carry the wool market to them in their grips. They keep up the steady travel week in and week out, doing the rounds in Maine and other New England parts. No matter if there are five men ahead of one at a mill, there is sure to be twenty more following, so they keep going the rounds selling a few bags here, closing a larger trade at some other place, until at the week's end they start for home to look over their samples and get freshened up to start out again on Monday morning.

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THE SILK ASSOCIATION OF AMERICA

The annual meeting of this organization was held in the association rooms, 354 Fourth Ave., New York, on March 25. The following officers were elected:

President, Charles Cheney; vice-presidents, H. Schwniewind, Jr., Louis Stearns, M. W. Dippel; secretary and treasurer, Ramsay Peugnet.

Managers: Riochiro Aral, Theodore Boettger, Edward E. Bradley, Conrad Buhler, Charles Cheney, B. Edmund David, M. W. Dippel, Frank W. Eaton, Isidor Hellman, Fritz Hill, August Hunziker, Henry D. Klos, Samuel McCollom, Charles E. Lotte, Russell Murray, Jerome C. Read, E. C. Rossmassler, H. Schniewind, Jr., Robert Schwarzenbach, William Skinner, Henry J. Soria, Louis Stearns, Emil J. Stehli, Benjamin B. Tilt and A. D. Walker.

Secretary Peugnet presented his report which was in part as follows:

In the forty-one years since the Silk Association was organized there has hardly ever been so great a volume of business transacted in a like period. Business has been excellent. With bumper crops all over the country has come a period of great prosperity with all our people, the result being that there is more money to be spent for the luxuries of life.

As is always the case in an industry which is absolutely at the mercy of the whims and fancies of fashion, those manufacturers who have been the most discerning stylists are reaping the greatest financial rewards. The demand in silk fabrics is being constantly more and more diversified and American manufacturers are equipping their factories and training their organizations with this in view.

The development of the industry as regards the quality of goods produced has been truly marvelous. America now leads the world not only in the aggregate amount of goods manufactured but also in quality and style.

The summer of 1912 witnessed the passing of the great demand for chiffon taffetas, and with the coming of autumn, charmeuse and messalines were the principal fabrics upon which Dame Fashion put the cachet of her approval. Charmeuse, messalines, and in fact the whole family of satin faced fabrics have been good for many seasons; in fact, ever since sheath gowns and Directoire styles gained such an immense vogue in the summer of 1907. The women have not abandoned the narrow skirts since that time and in spite of the many efforts that manufacturers and style creators have made to popularize wide skirts their efforts have been unavailing.

With the early winter came an increased demand for crepe de chine which grew rapidly until at the present time it far exceeds the supply. Every box loom that is available is being driven to its utmost capacity to turn out these goods.

Printed fabrics promise exceedingly well for the coming summer and many striking designs are shown, including those called Bulgarian or Balkan which abound in bright vivid colors and which have crowded the soft pastel shades off the stage of fashion. Some startling Cubist and Post-Impressionist designs and colorings, which have been borrowed from our artist friends, would seem much more appropriate for silks than for the painted canvas, and have been seized with avidity by some enterprising merchandisers in their straining after a new effect. Crazy and incoherent as these designs and colorings appear at first glance it really seems likely that they are going to prove powerful determining factors in fashions, or perhaps it would be more correct to say that the ideas behind these pictures will prove such factors.

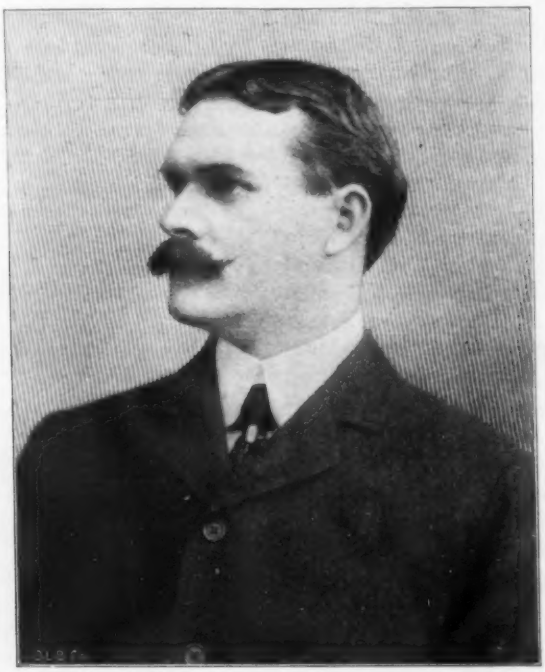
The latest reports from Paris indicate a reviving interest in taffetas, which would point to an increased demand for these fabrics this spring.

Shantung and printed Shantung will be in a good demand the coming summer according to the present outlook.

Tariff revision has occupied the attention of the silk manufacturers since it became certain through the election of President Wilson that the various schedules of the Payne-Aldrich act would be revised. This has proven rather a disturbing factor and it will be much regretted if any material change is made in the tariff on silks and silk goods, especially in view of the general satisfaction the present specific duties have given in comparison with the former ad valorem duties.

The American Cotton Manufacturers' Association

Not in years has there been a meeting of a cotton manufacturers' association which showed more earnestness and interest on the part of those in attendance than did the seventeenth annual convention of the American Cotton Manufacturers' Association at the New Willard, Washington, on April 8, 9 and 10. This was due to the fact that on the day before the first session the Underwood tariff bill was made public, showing rates on cotton yarn and cloth, not only materially below those proposed by the American Cotton Manufacturers' Association and known as the Parker rates, but in some cases lower than the rates in the Underwood bill of 1911 and 1912. Coming as it did on the eve of the meeting this news made the tariff the principal topic of discussion both in and out of the convention hall. Despite this, however, the address and papers on other subjects than the tariff held the close attention of a large number in attendance, which speaks well, not only for the business-like methods of the Association, but for the character of the addresses and papers, every one of which was followed by an animated discussion. The first session was called to order at 11 A. M. Tuesday, and President W. A. Erwin delivered the following address:



STUART W. CRAMER, ELECTED PRESIDENT OF THE AMERICAN COTTON MANUFACTURERS' ASSOCIATION

PRESIDENT'S ADDRESS

We have the honor to greet you at the opening of this, the seventeenth annual convention of The American Cotton Manufacturers' Association, and to share with you the privileges accorded us as an Association in this, the capital of the greatest nation in the world; and in doing so, may we hope that you shall not only realize that pleasure which reunited friendship brings, but that in the proceedings of our convention you shall find special interest and real enjoyment.

The past year has brought forth abundant crops,

and "peace and plenty" prevail throughout our land, for which we should be truly grateful to kind Providence. The late storms and floods in the Ohio River valley and other central sections of our country, with the consequent loss of life and destruction of property, elicits our most earnest interest and deepest sympathy, and our Association desires, we are sure, to make public expression of same.

Our nation has been recently saddened through the loss of our distinguished fellow citizen, J. Pierpont Morgan, of New York. From all we know of this good man, it can be well said of him that his greatness and power were dependent more upon his integrity and sense of justice, than

W. A. ERWIN, THE RETIRING PRESIDENT

upon business acumen. We rejoice that while living, in his wisdom and goodness, he left no pitfalls to disturb the financial and commercial life of this country upon his demise.

At our last convention, held in this city a year ago, and at previous conventions, held in other cities, my distinguished predecessors have favored you with most interesting and valuable details of spindleage, and historic sketches pertaining to the cotton manufacturing interests of our nation, and of the entire world. We shall, therefore, not undertake to enlarge upon same in this address, nor to weary you with the recounting of details pertaining to our manufacturing interests, with which you all are so familiar.

It was a pleasant task of Captain Smythe, in his convention address last year, after a long siege, running through several years of extreme depression in cotton milling, to forecast bright prospects for the remainder of 1912, and to predict better things for the future. We all can rejoice in the fact that 1912, generally speaking, was a good year in the cotton manufacturing business, which means that we had a good share of export trade with our South American republics and with the Orient. The prosperity that has come to the manufacturing and commercial interests of our country in every line will go down in history as a most unusual condition prevailing in the face of a presidential year, and the inevitable and freely predicted change of administration in our national affairs. On the fourth of March, this year, His Excellency Woodrow Wilson, the choice of the nation at the November election, took in hand the reins of this government, and we are perhaps especially favored in holding our convention in the national capital the day after the assembling of the law makers of our country, called in extra session for the special task, as we understand, of revising our tariff laws.

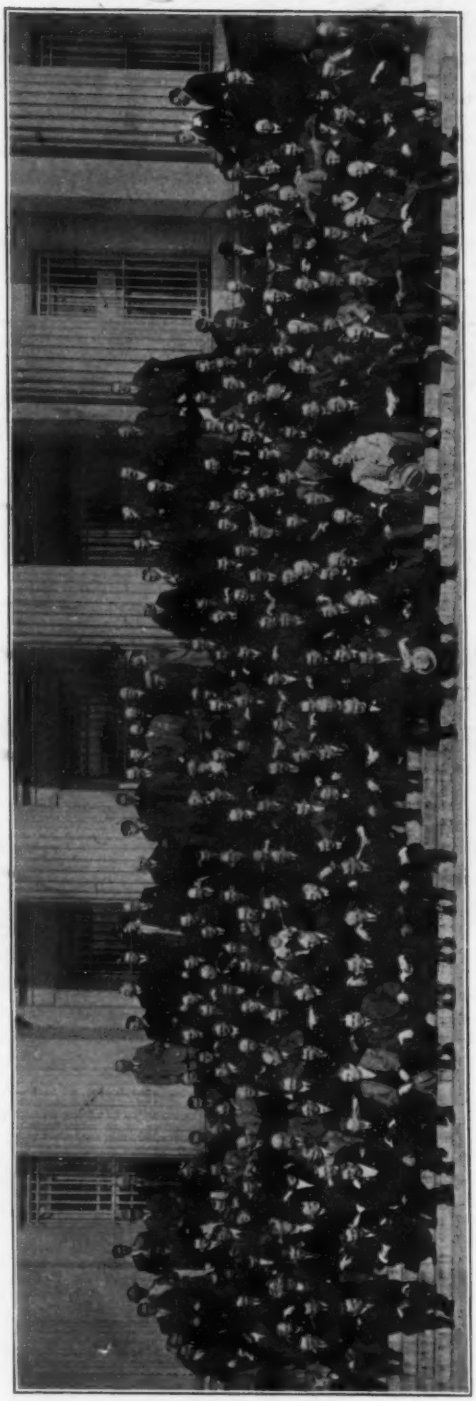
A downward revision of the tariff, which the party now in power, and having a majority in both houses of Congress, is committed to, is fraught with hazard not only to the success, but

C. B. BRYANT, SECTRETARY

very existence of some of our industrial and commercial enterprises. This revision is contemplated with the gravest apprehensions on the part of some of the members of our Association. However, in our opinion, the matter should be considered by the American people from a fair and broad viewpoint, and a great measure of hope be indulged in that the new administration shall deal with this most important matter on progressive and yet wise and conservative lines. This hope we think is fully warranted by the confidence ex

pressed in the November election in the present administration by a great majority of the voters of our nation. Especially is general confidence centered in the wisdom and justice of that great statesman, the present head of our republic, whose wisdom would prompt him and whose courage would not fail him in vetoing any measure which would threaten the industries that we have here assembled in annual convention, to perpetuate and rejoice in.

For your further encouragement, may we say, what you perhaps already know, that the Ways and Means Committee of the lower house of Congress, of which that distinguished, broad and able statesman, Hon. O. W. Underwood, is chairman, in the month of January gave a very patient hearing to our Tariff and Legislative Committee, which we think presented very clearly and strongly the matter of the tariff as affecting all descriptions of yarns and cloth manufactured from cotton, and so vital to the interests of the members of our Association. They also went so far as to suggest, in tabulated and printed form, the minimum reduction, or minimum duty, that the members of our Tariff Committee felt that our cotton mills could exist and prosper under. While some of our members feel that the recommendations, which our Tariff Committee took the liberty of making as to reductions, were excessive, your President kept close enough to the Tariff Committee, in its labors and in the presentation of your interests before the Ways and Means Committee, to know that they were faithful and conscientious in their efforts to fairly deal with their task; and we find personal gratification in feeling that our Committee so impressed every member of the Ways and Means Committee. Further, we believe that the Ways and Means Committee is giving due consideration to this most important feature connected with their tariff revision labors. We take pleasure in adding that a vote of thanks is due by our Association to the Tariff Committee for its efficient and faithful labors the past year. We believe when the whole truth is known that every member of Congress, and all our Senators, will also feel indebted to our Tariff Committee for the true light that it has thrown on the question of tariff as it applies to the cotton manufacturing industry in this country. Before leaving this question, it is proper to express our sure confidence in the progressive, yet sane, law makers of our great nation, and in the continued prosperity which our mills are now enjoying, and in which the nation and commercial world are taking their part. The world is to be congratulated that the abnormal increase in cotton mill spindleage which several years ago threatened the undoing of the cotton manufacturing industry, has not for the past several years been so pronounced. We shall hope, with tariff revision on reasonable lines, and wise and sane banking and commercial laws enacted by the present administration, and with the opening of the Panama Canal, the greatest of the world's undertakings; with peace in Europe, the Great Chinese republic working out a prospective and wonderful nation, with every nation of the world nearer today than ever before, basing their highest ideals on the Christian religion, and with a gracious increase in Christianity in our own land, that the industrial and commercial enterprises, and the



THE MEMBERS AND GUESTS AT THE MEETING OF THE AMERICAN COTTON MANUFACTURERS ASSOCIATION

financial institutions of our country shall prosper throughout this and the coming years, as they have never done before.

REPORT OF R. M. MILLER, JR., CHAIRMAN

As your Committee on tariff and legislation, we beg to submit Tariff Bulletins Nos. 5 and 6, copies of which we herewith present, and ask that they be approved, accepted and made a part of the records of the Association. These bulletins comprise the work of your Committee since our last annual meeting in this city a year ago.

We desire to call special attention to Bulletin No. 6 as not only containing a vast amount of original data, but also as embracing the Hearing before the Ways and Means Committee of the House of Representatives on January 22nd. In it will be seen the tariff rates suggested by our Committee on cotton manufacturers—Schedule I. If, perchance, misfortune or disaster comes to our industry by extreme and unfortunate legislation, it will not be from lack of knowledge of the situation and of carefully presented facts on the subject; the responsibility, therefore, will certainly not rest upon the cotton manufacturers of the United States.

President Wilson has stated that:

"Business in a country like ours is sensitive to changes in legislation and its foundations must not be too radically or too suddenly disturbed. When we act we should act with caution and prudence, like men who know what they are about and not like those in love with a theory."

The work of your Committee is now completed; its evidence has been presented, and we now await the verdict. The members of the house and Senators in Congress are in the jury box; the President is on the bench; and, we cannot believe that the verdict will be injurious and disastrous to the great industry we represent, upon which the welfare, directly and indirectly, of so many people depends.

On behalf of the Committee, we beg to acknowledge our obligations to Stuart W. Cramer, a member of the Committee, and to Lewis W. Parker an ex-president of the Association, for the valuable work done by them; but for their knowledge of the tariff and untiring energy in behalf of our cause, the work of your Committee would have been much less thorough and complete and therefore much less effective.

REPORT OF SECRETARY AND TREASURER

On account of the reports of the various Committees, showing much of the work done by the Association during the year, it becomes necessary that this report show only the physical and financial condition of the Association.

Terms of office of the following members of the Board of Governors, viz.: Carroll Baldwin, W. E. Beattie, W. T. Bryan, Caesar Cone, Jesse P. Eddy, and Scott Maxwell expire by limitation. Therefore you should elect six new members of the Board, in addition to the President, Vice President and Secretary and Treasurer.

We cannot too strongly urge upon the members the importance of their using every effort to secure additional members, whose influence and interest will be of the greatest value to the successful work of the Association; and, in view of conditions existing as regards tariff and other legislative matters, we feel that it is necessary that the Association and every one engaged in the cotton textile industry should use every possible effort to protect the interest of the industry to the best possible advantage during the next few years.

Appended is statement of the membership and financial condition of the Association.

Hon. W. C. Redfield, Secretary of Commerce, was unable to be present owing to a cabinet meeting. His address was postponed until Wednesday's session, and in his absence A. H. Baldwin, chief of the Bureau of Manufactures, addressed the meeting. Mr. Baldwin gave an account of the work of the special agents abroad in studying foreign markets and called attention to a collection of samples of cotton cloths on exhibition at the meeting and which had been recently collected and sent to the Bureau from various foreign countries.

COMMERCIAL AGENTS OF THE BUREAU OF FOREIGN AND DOMESTIC COMMERCE

BY A. H. BALDWIN

The work of the Bureau of Foreign and Domestic Commerce of the Department of Commerce must be already fairly well known to most of you through the publicity which has been given to it in your trade journals and also through the publicity which the Bureau itself is constantly striving to secure through its own periodicals and bulletins. In August last this office was given its present name and the former Bureaus of Manufactures and Statistics were combined to constitute a stronger service with broader functions than had been assigned to either of these constituent branches.

With the termination of the work of the Tariff Board last year there were assigned to the Bureau of Foreign and Domestic Commerce certain duties very closely related to the work of investigation carried on by that Board, and it may be that in the future very important service in the field of research for the illumination of the subject of tariff charges may occupy a much larger share of the interest of this Bureau. Such work will direct further special attention to the importance and value of the field service of the office, or its corps of commercial agents about whom I will speak very briefly today. This field service has now been carried on, first by the Bureau of Manufactures, and now by the new office, since the year 1905. The promotion of commerce, which is broadly the duty of the Bureau of Foreign and Domestic Commerce, implies the collection of useful facts about trade, both foreign and domestic, by any methods that promise the successful accomplishment of this purpose. The collection of general facts and the record of the current history of trade, especially in the field of foreign commerce, is to a large extent the work of the consular officers of the Department of State. These officers, under the terms of the

existing law, are required to report on commercial matters whenever requested to do so by the Secretary of Commerce and Labor, and this service of general reporting or current observation of the progress of trade is admirably performed by the consuls. These officers, however, from the exigencies of their work, their close confinement to their posts and the demands upon them in connection with their other duties, are unable to take time to carry their trade investigations very far, and naturally in technical matters where special training is required it is not to be expected that they can render expert service.

It is at this point in the development of export trade that the Commercial Agent steps in and

A. H. BALDWIN

supplements the work of the consuls by detailed investigations of a character which he is equipped to perform from his previous experience and training in some special field. Effort has been made to secure men for this work whose training is recognized by their associates as adequate to equip them to render useful service. Often the recommendation of such associations as your own is sought before appointments are made by the Department. In studies for the benefit of the trade in which you are especially interested the Bureau has had almost continuously since the first appointment of commercial agents one or more men traveling in the various foreign countries observing and collecting facts that might be of service in the extension of the export trade in cotton textiles. There is scarcely a country in the world that these men have not visited during the progress of this work. A list of the titles merely of the reports of these commercial agents on this subject will indicate the range of their travels. For example, we have issued pamphlets on cotton fabrics in British India and the Philippines; cotton textile trade in Turkey, Greece and Italy, in middle Europe; in Latin-America; in Spain and Portugal; in Russia, Egypt, China, and so on. At the present moment we have two men, whom most of you know by reputation, engaged on this work. They are Ralph M. Odell, who is now in Africa actively pursuing his investigations, and W. A. Graham Clark, who has recently completed careful studies in Canada, and who is now in Manchester, England, where he is in an admirable location, of course, to report on the trend of important matters in this trade, as that city is recognized as the center for the whole world in this field.

Not only do these men collect facts and figures, but they also obtain samples of goods which may command a ready sale in foreign countries and these samples are sent at frequent intervals to Washington. The Bureau has developed a practice of sending these samples around the country for the information of our cotton textile manufacturers. Many of these examples of cotton textile products are here now for your inspection, marked with the facts about their origin, cost and other details.

The reports which our commercial agents make to us are usually printed in the form of special bulletins covering a single country or district, although sometimes we use them in the Daily Consular and Trade Reports, or at times we send out short items in the form of special letters or confidential circulars transmitted direct to the manufacturers and exporters of these products. The service is supported by annual appropriations which have ranged from $30,000 to $60,000 a year. The sum available for the coming fiscal year of 1914 is $60,000.

We have ample evidence that this service is useful and practical. We know that much new business has resulted from these investigations, and we know also that these expert observations are giving a better and better picture of conditions in foreign trade as their reports are multiplied.

One factor to which I might direct attention here, a factor which has impressed those of us closely interested in the work, is a more or less evident indifference of some of our exporters to this service. I feel that we are justified in expecting, and I know that we would welcome, a more sympathetic attitude toward it, a more positive interest in it, and a greater use of the information which is collected at a cost of so much valuable effort. I am well aware of the conditions under which your products are usually sold abroad, and I understand that your local and domestic interests are such that you naturally feel that you have not time to study the details of this foreign trade, but I am convinced that it is a mistake to neglect this important branch of our commerce and to permit our agents to monopolize the knowledge in regard to it. I wish to urge seriously that the members of this association study carefully the organization which is maintained by the United

States Government in your interests, as I know that with a knowledge of it the work will receive your more positive support and encouragement. It seems certain that in the development of our foreign trade abroad in such manufactures as those in which you are specially interested we shall need all the legitimate assistance of this kind that may be afforded in order that we may not fall behind in comparison with other important nations manufacturing cotton textile fabrics. Our foreign trade will always be an important factor and it is likely that its relative importance will be greatly increased in the near future. All enterprising manufacturers should equip themselves with a broad, definite knowledge of the factors in this foreign trade, and it is in that field that this service of which I speak is of very definite importance, and I recommend it to your serious attention.

Alfred Reinhart, of Reinhart & Co., Alexandria, Egypt, then read the following paper:

METHOD OF GROWING AND HANDLING EGYPTIAN COTTON

By ALFRED REINHART, Reinhart & Co., Alexandria, Egypt

It has been a pleasure to me to have received an invitation from my old and valued business friend, C. B. Bryant, your secretary, to address this annual convention of your large and important association.

As you know, I am in the cotton business in Alexandria, but I am not altogether a stranger in your hospitable country. In fact, it was down South, nearly twenty years ago, where I had my first experience in cotton, and since then I have frequently visited the States, where I count a large number of personal and business friends, and it is always with gratification that I avail myself of any opportunity to come over here and look up my old acquaintances.

You will allow me to say a few introductory words in regard to the history of the cotton culture in Egypt. Recent discoveries and investigations confirm that cotton growing and manufacture was known to the ancient Egyptians several thousand years ago. However, the credit of realizing the possibilities of cotton cultivation in Egypt on a large scale is due to Mr. Jumel, a French-Swiss, who had previously been in America and apparently knew something of the cotton plant and fiber, and its commercial value. In the year 1819 or 1820, while walking in the neighborhood of Cairo, he noticed a fine cotton tree in the garden of a certain Maco or Maho Bey el Orfaly, at Boulay, a suburb of Cairo. He examined the plant, and was impressed by the long and silky staple of the few open bolls. On making inquiries about the origin of this tree, he was unable to obtain any satisfactory explanation, but it is supposed to have been a particularly well developed specimen of an ornamental plant which was growing at that time in a good many of the gardens around Cairo. After this, Jumel succeeded in interesting Mohammed Aly, the Turkish ruler of Egypt, in the question, and induced him to make trials with the seed gathered from the plant.

The experiment was crowned with success, and during the next two or three years, planting was extended and assumed fairly large proportions during the period up to 1860 when, according to statistics available, about 500,000 cantars were produced. The curtailed production of cotton in America during the Civil War caused a tremendous rise in prices of the raw material, and this gave every inducement to further increase the acreage in cotton in our country, with the result that in 1865 the total production of Egypt rose to about 2,000,000 cantars.

After the termination of the Civil War the crop harvested varied from one and one-quarter to three million cantars. A strong stimulus was given to the further extension of cotton growing two or three years after the occupation of Egypt by the British in 1882, when foreign capital commenced to be attracted, and the cultivation steadily increased, in proportion to the improvement and completion of the irrigation system, perfected by British engineers, who had in most cases acquired experience in East India.

To give you an idea of the importance cotton growing has assumed in Egypt, I may say that of the somewhat over 5,434,000 acres at present under cultivation, of which 3,211,000 acres in Lower and about 2,223,000 acres in Upper Egypt, very nearly one-third is planted in cotton, and the crop harvested during the last few years had a value of close on to $200,000,000.

The process of land preparation, sowing, chopping, weeding and so on, is done in much the same way as in other cotton growing countries. In some instances, however, our native farmer, or fellah, as he is usually called, is somewhat behind modern times in regard to the utensils he uses for tilling the soil. Up to the present, artificial manure is relatively little used, and the fellah so far has fallen back on farm manure and Nile silt to restore his fields to condition.

As we have no rain during the summer, watering is done entirely by irrigation, in rotations of two or three weeks, if the water supply is plentiful. This reliance on artificial watering constitutes really the essential difference in cotton culture between America and Egypt.

Our method of buying and handling of cotton in the interior is, however, quite different from yours. In the first instance the planter almost invariably sells his crop in seed. The unit of weight for seed cotton is the "big cantar" of 315 rottolis, or about 312 pounds, distinctive from the small cantar for lint of 100 rottolis or about 99 pounds.

All cotton is bought or sold on net weights, an allowance being made in the accounts for the actual tare. For seed cotton sacks the usual allowance is from 5 to 6 pounds and for hydraulically pressed bales, or village, bales, from 14 to 19 pounds, according to the weight of the bale.

Payment is made against all purchases of seed cotton in British gold sovereigns. Our farmers only reluctantly accept checks and even have their suspicions of bank notes since some forgeries have come to light.

You will, perhaps, also be interested to learn something of the cost of planting per feddan, which is the Egyptian equivalent for an acre, being only a trifle larger.

Land values vary according to the situation of the district, and the very best agricultural land sells at $1,000 per acre.

If a man's property is worked by hired labor, it costs him $15 to $20 to work one feddan, or acre, provided that conditions for watering, which is done either by aid of irrigation or artesian wells, are favorable. Artesian wells have only been introduced during the last ten years and are rapidly increasing in number. In the case of lands situated far away from large canals, where steam or cattle driven pumps are used for watering, the cost of raising cotton frequently amounts to $25 to $30 per feddan. Plowing, hoeing and weeding absorbs about $5; picking, between $3 to $4, and irrigation from $5 to $13. Taxes are assessed according to the value of land, and vary from $2 to $9 per feddan. Usually cotton is planted on a plot of land in rotations of three years. When prices are very high, a number of farmers grow it even every second year, but this is detrimental both to the land and to the quality of the produce. In addition, there is, of course, the price of seed, which comes to about $2 per feddan, and somewhere about 90 pounds of seed is required for one feddan.

If insects, such as worms in June and July, or boll worms in September make their appearance, such pests necessitate supplementary outlay from $4 to sometimes as much as $20 in order to save the crop from partial destruction.

The fellah, that is to say the native farmer, who works his own field with the help of his family, has practically no expense besides seed, the cost of the irrigation and taxes.

The yield of lint per feddan depends, of course, on the quality of the soil, position, and also on the conditions of watering. We have land which gives nine cantars, others two or three. And newly reclaimed stretches produce about one and one-half cantars. The average during the last few years for the whole country has been between about four and one-fourth to four and one-half.

On a rough estimate, the fellah has been able to sell his crop during the last few years at about $20 per seed cotton cantar, that is to say, basing myself on an average yield of only four cantars, he realized $80 per feddan, which, under the most unfavorable conditions costs him $40 to grow. From this you will readily understand that our fellah is always wanting to plant cotton. It is also quite common for a fellah to hire land exclusively for cotton cultivation, and only for the period necessary to make the crop.

In Upper Egypt, picking begins toward the end of August, and in Lower Egypt about the middle of September. Since the establishment of an agricultural department by the Government, its efforts have made themselves beneficently felt. The experts attached to the new department have been very active in enlightening and instructing the native planters as to the best methods and means of growing cotton, of which a chief feature is "early sowing" in order to obtain early maturity of the crop. The most formidable enemy of cotton in our country is the boll worm, which appears during the month of September and attacks bolls not fully developed. In order to insure a full crop, the Government insists on early planting to have the bulk of the crop, that is the first and second picking, ready for gathering by the time when the boll worm usually commences to spread.

Two years ago the Government began to issue monthly reports on the condition of the crop, which in time will become very useful. The system adopted by the Egyptian Government for expressing the condition, is that in use by the International Institute of Agriculture in Rome.

Picking is done mostly by children, under the supervision of a grown-up person. Schools, if there are any, close down during this period, in order to give the children an opportunity of earning from 10 to 15 cents a day. The work starts in the morning when the sun is up and when the heavy dew, consequent upon irrigation, has disappeared, in order to prevent dry leaf sticking to the damp cotton. The amount of cotton picked during a day's work by a child is about 25 pounds seed cotton. As soon as a sufficient quantity is picked, it is filled in sacks, each one containing roughly 400 pounds.

In case the grower has not sold his cotton, he keeps it on the field or in the village until some buyer comes along and offers him a convenient price. Some large land owners and cultivators in Lower Egypt store the cotton in seed in their own barns until they obtain their price and the buyer comes to take delivery.

It also happens that picked cotton is left spread out over night on the field in order to increase its weight through the heavy night dews which are so frequent in Egypt.

From the villages the cotton is transported either by the Government railways, or by the narrow gauge agricultural lines, as well as by barges on the canal, or on the back of camels. A camel carries two sacks of about 450 pounds each. It is quite a comon occurrence for seed cotton to be transported over the country for forty miles until it reaches the ginning factory where the buyer wants to have it ginned, as there is no law in this country to oblige the grower to gin at any special factory. There is however, a restriction in regard to Upper Egyptian cotton, which, in order to prevent mixing of seed with the qualities grown in the Delta, must be ginned in Upper Egypt.

The sacks filled with seed cotton on arrival at the gin are stored in the yard of the factory, and during the busy season from 20 to 60,000 cantars (interior cantar about 312 pounds) of unginned cotton are stored in this way awaiting their turn. Some of it may be lying for two or three months until it can be ginned. This is rather a drawback, as the staple and appearance of Egyptian cotton suffers to some extent when kept in seed for any length of time.

Each ginning factory employs one or several classers, whose duty it is to grade the seed cotton sacks. Exporters are particularly careful when classing seed cotton, as they naturally prefer their lots as even running as possible, while some of the dealers, less well acquainted with the needs of a mill, pay comparatively little attention to this part of the classing.

There are steam presses attached to some of the ginning factories and some of the exporters press their cotton for shipment immediately after ginning, but this system is not general, as most firms prefer to have the up-country classification controlled by their Alexandria experts before finally pressing the cotton.

There are about 150 ginning factories in Egypt, situated in the larger cotton centers of Lower and Upper Egypt. On the whole, they are on a much larger plan than yours, and each factory has from 20 to 140 gins, all Platt's pattern with leather

roller, the same style as those used in the Sea Island districts. Saw gins are only in use for separating from the seed the afritta, which corresponds to your linters. This style has been found to be the most suitable for long staple cotton and does not cause any gincut. The value of a fully equipped roller gin in Egypt is $75 to $90, according to the novelty of the pattern. The gins are usually put up in two rows in a well aired and lighted room, the power necessary to drive a gin being from 3 1/2 to 4 h. p., including the running of accessory machinery.

The usual charge for ginning one cantar of cotton is from 30 to 40 cents. The output of a gin per hour is on an average 110 pounds of lint. The gins are generally fed by native children under the supervision of European foremen, and the wages paid for a working day of 16 hours, are from 12 1/2 to 25 cents. And here I might remark that children below the age of 13 are not allowed to work in ginning factories. If adults are employed, they usually get from 20 to 40 cents for the day. Of course the children do not work 16 hours right through, but arrange for shifts of three or four hours with intervals for meals. The factory runs without stopping for 16 hours.

Every ginning factory has hydraulic presses with an opening room attached, to which the cotton is conveyed from the gins on trolley rails. There the cotton is spread out and slightly sprayed in order to give it back the natural humidity which is partly lost during the ginning process on account of evaporation.

Then the cotton is put into the press boxes worked by hydraulic pressure, and the finished bale, with four to six hoops and well covered with bagging, has about the same shape as has an American plantation bale, but is much more densely pressed and weighs from 600 to even 1,000 pounds. Very little cotton pressed in bales is kept up country, as good warehouse facilities do not exist except in Alexandria, where a good many of the warehouses are now fitted with sprinklers and drenchers. In fact, as soon as the bales are pressed, they are generally forwarded straight on to Alexandria either by rail or on Nile boats. The railway freight rates vary considerably and are not calculated by mileage, but are adjusted to the amount of competition encountered from canal and river skippers.

It would forcibly strike anyone from your country that so much of the handling of cotton is done by manual labor, and although a good deal of money would be saved by having more recourse to mechanical contrivances, the cost of hands in our country at present is still so low that there is really very little inducement to make any change. Still there are some indications that more modern labor and time-saving appliances are being put into the establishments of recent date.

A fair percentage of the crop is bought by merchants during the spring and summer months, but of course the bulk is sold during the period of picking and harvesting; the quantity of cotton which comes down to Alexandria "unsold" is hardly 50 per cent. of the total annual yield, in other words, on an average, about half of the crop is bought by exporters directly up-country, while the remainder is either secured by dealers for re-sale on the spot market in Alexandria, or is consigned directly by planters to banks and merchants of that city.

As already pointed out the cultivator sells his cotton crop almost exclusively in seed, either to Alexandria exporters direct through the intermediary of native or foreign agents and dealers, as well as through banks established in Alexandria having interior branches. A substantial share of the crop is often disposed of as early as in January, and even earlier, that is to say quite frequently before the cotton has ever been sown, and from that time right through the summer. When a fellah sells in this way, he stipulates "on call" terms, that is to say, he sells his anticipated production at a premium above or a discount below quotations at the Alexandria futures Exchange. He has the option of fixing the price until the expiration of the month of delivery on which the price is based. On conclusion of a contract of this kind, the seller further insists on a certain payment in advance, which is usually fixed at $5 per cantar (312 pounds) of cotton seed. This system of selling and taking advances on crops not then assured, although done on a very large scale, is not so satisfactory from the point of view of a merchant and often gives rise to law suits and involves serious risks. In addition, this custom of selling "on call" has brought about a good deal of speculation in the basis on the part of native dealers and merchants up-country. According to the Egyptian code of the mixed tribunals, a contract for the sale of any kind of crop which is not above ground, does not hold good before the law, nevertheless, this practice seems to assume larger proportions every year as the interested parties have found means to circumvent and snap their fingers at the law.

Banks do the business in another way. They advance money against more or less safe security, and against the promise to deliver a certain amount of cotton, which is ginned in the bank's name and then sent to Alexandria where it is sold on the open market for account of the planter.

It has been said, and there is no doubt something in it, that a certain class of dealers up-country are taking advantage of the ignorance or simplicity of the fellaheen, especially the smaller planter, and are imposing upon him with regards to price and weights. To put a stop to this kind of practice, and to make sure that every fellah gets the full value for his cotton crop, the Egyptian Government commenced last season to establish in some of the large centers in the Interior, official cotton markets, where the weighing is done by a public weigher against payment of a small charge. On these official markets, locally called "Halakas," futures quotations as well as spot values on the Alexandria markets are regularly posted up. This innovation so far has been a fair success, and the Government intends to increase the number of these markets considerably within the next few years. In this way it is probable that the sale of cotton in Egypt by the planter will come more in line with the custom in the cotton belt in your country.

The areable land in our country is mostly owned and worked by small holders, in fact, of the 5,458,608 feddans under cultivation in 1911 (excepting State Domains and non-taxed lands) were owned by 1,441,250 proprietors. 1,296,561 proprietors possess on an average a little more than one acre; 76,382 about six and one-fourth acres; 36,461 about thirteen and one-half acres; 11,181 about twenty-five acres; 8,265, roughly,

forty acres and 12,393 a little below two hundred acres. During the last ten years a slow but constant decrease in the number of feddans owned by large estates is noticeable, while a marked increase in the number of small proprietors is apparent, which demonstrates clearly the improvement in the financial position of the small farmer who becomes more able continuously to acquire and own land. I think it is the Government's aim to support this movement strongly, and therefore it does everything to protect the interests of the small farmer, as is clearly demonstrated in the recent legislation. I think that everyone who has occasion to spin Egyptian cotton will agree that the class, character and staple of each bale in a shipment is absolutely uniform. This satisfactory result is obtained by the exceptional care which the exporter devotes to the classing and handling of the cotton in Alexandria prior to pressing for shipment.

As the hydraulically pressed bales come down from the interior, they are stored in the Alexandria warehouses which are owned by companies or by private individuals. These are centered round the spot market exchange, which is near the quays and about a mile distant from the heart of the city. All the export houses and banks who deal in cotton, have an office in that exchange, consisting of a fair sized buying or sale room, with a good cotton light. There are also two "cafes" indispensable in the Orient for the satisfactory transaction of business. The regulation of the cotton business in Alexandria is in the hands of the Alexandria General Produce Association, of which all the spot cotton traders are members, but the cotton exporters have a large majority on the executive committee. Trading on the spot market begins at about ten and ceases at about half past one. The sellers bring samples to the exporters at their offices and if a price is agreed upon, the exporter sends his own men to the warehouse to sample the cotton; on the second sample being brought, the exporter is free to accept or refuse the cotton at the original price, or to offer a lower price; even though the parties come to terms on the buyer's sample, the transaction is not then complete, as the buyer has the option of refusing the purchase in case he finds the quality unsatisfactory when he examines it in the warehouse on the same afternoon. The cotton is paid for in cash on the day of purchase.

A distinctive feature of cotton trading in Egypt is the prolonged bargaining which is necessary before a transaction can be completed with the native and often with the European merchants The seller, who frequently has no definite idea of the exact value of his cotton before offering it for sale, will submit a sample to several buyers in turn and, having obtained an offer, will ask an extortionate price and then go around to other prospective buyers trying to obtain an advance on the first offer, until he is fully satisfied that he has received the best price possible. This system, which naturally entails much waste of time, will perhaps be modified and improved in the course of years, but, the difficulty with which any change depending on common agreement is made in Alexandria, stamps this cosmopolitan city indelibly as a part of the "unchanging East."

Situated in the same district are the three pressing companies which warehouse the hydraulic bales, deliver them to the exporters' opening room to be selected, steam press them according to his instructions, warehouse the steam pressed bales and cart them to the quays for shipment.

I think that the work done in the opening rooms of the press by the exporter is quite peculiar to Egypt; it has become essential for the satisfactory outturn of cotton which has not been carefully classed in the Interior owing to the large number of different kinds of cotton at present grown in the Delta.

It is unnecessary for me to explain to you that Egyptian cotton is sold equal to the exporter's standard in class, staple and style, and that most export firms have from 40 to 100 different standard types; this being so, you will understand that it is difficult to buy, against a sale of say five hundred bales, a lot of five hundred bales which corresponds exactly to type; therefore, the exporter is compelled to select several lots of cotton which, combined, will give him the quality and quantity required. These lots are brought to his opening room and one bale of each lot is stripped of its canvas opposite a large wooden case with a wooden grating on the top side, the dust is beaten from the cotton by women and then the men open it piece by piece on the grating (four or six men work to each bale) and throw it into the middle of the room where it makes a heap with the cotton thrown from the other bales; it is then bound up in loose sacking and stored at the further end of the room until the quantity required is finished and the cotton can be pressed.

It is obvious that, when this system is worked out accurately, through the care exercised in selecting lots equal to the type and the detailed examination of the cotton by the Arabs in the opening room under the supervision of an experienced foreman, a satisfactory even-running shipment must result. In the case of any lots of cotton which contain broken seed, stained cotton, leaf, mixture of other kinds of cotton, the opening is done with greater care and the imperfections are as far as possible removed. Owing to the cheap labor obtained in Alexandria (from 40 to 50 cents per man per day) the exporter is fully repaid for the extra care which he bestows on the opening of his cotton by the improved outturn of his shipments.

For very low grades in each pressing establishment there is a machine to thoroughly open the cotton and remove dust, dirt and leaf, etc. The machine consists of from six to eight troughs of which one end is open to receive the cotton and the other opens on to a moving grating which conveys the cotton to the press. Across each trough are three revolving beams with wooden teeth about six inches in length, which beat the cotton open and throw it on to the moving grating. Half of the troughs are situated on each side of the grating, which is closed in on both sides, with an opening at the top through which the draught takes the light dust.

The pressing establishments have from one to four steam presses in each building and these are used by their clients in turn. Each press has three cases which, after a bale has been pressed, revolve for one-third of a circle, so that a case which has been previously filled, comes above the piston which applies the pressure. One piece of canvas is always placed on the bottom of the

empty case which is half filled with cotton before the machine revolves; when the case comes into the second position, it is entirely filled with cotton by six men, who stamp on it. Then the case is moved into the third position over the piston which applies the pressure, the canvas for the remaining three sides of the bale is thrown over the top of the cotton so that it hangs over the sides of the case while the pressure is being applied, when the piston has reached its highest point the doors forming two sides of the case are opened and the bands for binding the bale are pushed through grooves prepared for them and buttoned, the piston then descends and the bale is pushed from the case and glides down a slope to the room where the two caps are sewn on the ends it is weighed and marked for shipment.

The cubic capacity of a hydraulically pressed bale is about 50 cubic feet, against about 17 cubic feet of steam pressed bales.

The Pressing and Warehousing Companies store the steam pressed cotton until they receive instructions to ship, when they cart the bales to the quays and deposit them alongside the ship on which they are to be loaded under the supervision of the shipper's representative.

Although the Alexandria General Produce Association has no official contract forms for cotton shipment sales, there are three recognized methods in general use: The "cost, insurance and freight" terms which are used almost invariably with England and America, the "free on board" terms on which sales are usually made to the continent of Europe and the "free on wagon" terms which are often employed in Trieste and some other Mediterranean ports.

The constitution of the Alexandria Futures Exchange has been formulated by the Government on the same principle as the Paris Bourse; it is composed entirely of brokers who are not allowed to trade in any way as merchants or to follow any other calling than that of broker; owing to this the futures broker does not handle spot cotton at all and the regulation of the differences and conditions applying to tenders are entirely in the hands of the Alexandria General Produce Association, although the dockets have first to go through the Futures Exchange clearing house.

You have probably heard of the wide facilities which the British Government have granted to promote cotton growing in the Anglo-Egyptian Sudan, where there are possibilities of raising within the next ten to fifteen years over one-quarter of a million bales of cotton equal to the style grown at present in Egypt.

To you our system of handling cotton in the Interior as well as in Alexandria may appear somewhat complicated. Its origin no doubt has to be traced back to many years ago, when cotton was in its infancy in this country. At that time the fellah grew only a limited quantity and as the pressing facilities we have today did not exist then, he sent down his cotton in sacks and probably threw the first, second and third picking, as well as all the different grades together. This made it incumbent upon the few exporters then established in Alexandria, who had some knowledge of the requirements of a spinning mill, to open each sack, examine it carefully and separate, so to speak, the wheat from the chaff. What was a necessity then, has established itself in the course of time as a custom, and has so remained to this day.

You in your hustling and progressive country will probably smile at this long attachment to old habits. I can assure you however that, although we are practically doing part of the work which is usually done in the mixing room in the mill, in this instance an old custom has proved its value, for the reason that it has established the high reputation of our shipments in all parts of the world where our growth is used.

In conclusion I should like to say that I have followed with great interest the various efforts that are being made in your country with a view to produce a style of cotton that could vie with our staple. I sincerely wish that your efforts will have the complete success they deserve. Meanwhile I hope that I shall have the opportunity of selling you sufficient cotton to enable me to visit your country frequently.

During the discussion Mr. Reinhart took occasion to state that the practice of sprinkling cotton in Egypt was for the purpose, not of increasing the weight, but of improving the condition of the staple. He stated that it had been found that sprinkled cotton brought one-half cent more per pound on a conditioned basis in Manchester than did unsprinkled cotton. He also expressed the belief that the lower prices for Sea Island cotton that had prevailed in recent years had been brought about by the increase in the Egyptian crop of long staple cotton.

REPORT ON COTTON EXCHANGES

The report of the committee on cotton exchanges was presented at this point by Chairman Ellison A. Smyth, and was as follows:

The report of your Committee on Cotton Exchanges respectfully states:

That during the past year your Committee has not been able to accomplish much toward remedying the evils heretofore complained of in connection with the Cotton Exchanges.

However, as you have been previously advised, the New York Cotton Exchange some time since made provision for an additional revision with regard to differences in grades to be made in February of each year. This provision became effective during the past February, and we regard it as beneficial, though not in our judgment sufficient to meet the conditions.

During the past several months the disparity between the ruling prices on Cotton Exchanges and prices charged by the dealer and consumer for cotton of good spinning value has been most marked. This disparity has had the effect of rendering of little value the use of Exchanges as a hedge.

Your Committee realizes that there is in the trade an important place for the exchanges to occupy and can only again express their regret that this important position is not occupied by them; certainly in the case of the New York Cotton Exchange. It has a splendid opportunity to

be of great value to both producers and consumers, and it is with regret that your Committee feels that the members of the Exchange do not show an appreciation of their position in the trade.

While the producer is to be congratulated upon the fact that in a great measure he has proven sufficiently independent of the Exchanges as to obtain a fair price for his commodity, notwithstanding the depressing effect of the rules thereof, nevertheless, the loss to the producer in our judgment in the past several months has been great, as the results of the depressing effect of these Exchanges and particularly of the New York Cotton Exchange; for it must be admitted that the New York Cotton Exchange has probably an effect on prices, greater than that of any other Exchange.

Your Committee feels that it is advisable for this Association to continue its efforts to remedy the conditions existing, and while asking that the present Committee be discharged, recommends that a Committee upon this subject be continued.

Your Committee feels that it is particularly important that cooperation be had with the members of the Exchanges looking toward the adoption of uniform grades and your Committee recommends that this Association, through the proper Committee, join with the Exchanges in suggestions for legislative action, which may be necessary to amend the existing legislation on this subject.

Respectfully submitted,

Lewis W. Parker,
R. M. Miller, Jr.,
E. A. Smyth.

In the discussion of the cotton exchange question George W. Neville, president of the New York Cotton Exchange, spoke of the efforts that were being made to determine the comparative values of different grades of cotton in order to establish fair differences. Tests had been made at the Clemson College Textile School and Lowell Textile School and in the Tremont and Suffolk Mills and the results had shown a remarkable correspondence. Lewis W. Parker, of Greenville, S. C., replied to Mr. Neville, stating that the real question at issue was whether the quotations on the New York Cotton Exchange were to represent real or fictitious values, and that in discussing the tests at the textile schools, the Exchange was trying to avoid the question at issue.

An interesting incident at this session was the presentation of the Association medal to President Erwin, by ex-President D. Y. Cooper, who made a fitting response that showed plainly his appreciation of the honor and the high regard in which he held the Association. President Erwin then read the report of the National Council, representing the National Association of Cotton Manufacturers and the American Cotton Manufacturers' Association:

REPORT ON NATIONAL COUNCIL
PROPOSED RULES

New York City, October 23, 1912.

The National Council of American Cotton Manufacturers, authorized by concurrent resolutions unanimously adopted by the American Cotton Manufacturers' Association and the National Association of Cotton Manufacturers, shall be selected from the members of the two organizations for the purpose of representing the cotton manufacturing industry of the United States on matters of general importance.

This Council shall be composed of eight members, consisting of the President and three other members of each association. The President of each association shall in April, 1913, appoint three members of his association whose terms of office shall be for one, two and three years respectively and annually thereafter one member from each association shall be appointed by the President for the term of three years, and also three alternates, who are to act only in case of inability of a member to attend a meeting, and these appointments by the President of each association shall be confirmed and ratified by a majority of its Board.

The President of each association shall alternate as chairman of the meetings of the council. In the absence of Presidents the senior member of the association whose President is Chairman should preside.

When a member or alternate cannot attend a meeting, the President of that association may appoint another member of his association pro tem for that meeting only. The Secretaries of the two associations shall be permitted to attend the meetings, but not to vote.

The annual meeting shall be held on the first Wednesday in June of each year, at such hour and place as may be jointly determined by the two Presidents, and other meetings may be called when deemed necessary by the Chairman, or upon the request of three members of the Council, but notices for any meeting shall be mailed to each member of the Council two weeks in advance, except so far as members may agree to waive notice.

The general expenses of the Council shall be paid equally by the two associations.

This Council shall have authority to represent the two associations on matters which may come before it, but its action shall be binding on such association only when at least three representatives of each association favor such action; and the council shall not take any action which would impair the respective autonomy of either association.

Vacancies between meetings shall be filled by appointment of the respective presidents of each association.

Whereas, The members of the American Cotton Manufacturers' Association desire to promote closer and more cordial relations between the Cotton Spinners of Europe and America, and, Whereas, this Association is sending delegates to the International Cotton Congress which convenes at the Hague on June 9th, 10th and 11th, of the present year, therefore,

Be it Resolved: That this Association send greetings to the International Cotton Congress, through its Delegates, and that its Delegates to said Congress be, and are hereby instructed to extend to the European Spinners, and to the Spinners of all other Foreign Countries, a cordial invitation, on part of this Association, to send such Representatives, or Committees, as they may deem advisable, to the next Annual Meeting of the Association, and to take part in its deliberations.

Resolved Further: That the Secretary of this Association certify a copy of this resolution, and place the same in the hands of the Delegates from this Association, to the said International Cotton Congress.

Edward F. Greene, president of the National Association of Cotton Manufacturers, made a short address in which he referred to the importance of cooperation between the two organizations to further the interests of the common industry. He earnestly urged those present to interest themselves in the serious tariff situation, and to face the facts, arousing manufacturers by telling the truth without trying to minimize the danger.

At this point Lewis W. Parker brought the tariff question formally before the convention by urging that a protest be made against the rates on cotton yarn and cloth as proposed in the House bill No. 10 introduced the day before by Chairman Underwood. There was a disposition to postpone the report of the committee appointed to draft the protest until Thursday morning, but Mr. Hobbs pointed out that it should be done at once so that it could be presented to the Democratic Caucus meeting that evening. R. M. Miller, Jr., of Charlotte, N. C., agreed that the tariff committee should meet at once and make a report before adjournment. This was done with the result that the committee presented the following spirited letter of protest to Hon. A. Mitchell Palmer, chairman of the Democratic Caucus:

TARIFF PROTEST

Washington, D. C.,
April 8, 1913.

Hon. A. Mitchell Palmer, Chairman, Democratic Caucus—House of Representatives, Washington, D. C.

Dear Sir:—At the annual meeting of the American Cotton Manufacturers' Association held this day, a Committee was appointed to present to the Democratic members of the House of Representatives, a protest on behalf of the Cotton Manufacturers of the United States against the rates proposed in the Bill known as "H. R.—10" introduced on April 7, 1913, by Hon. O. W. Underwood, and referred to the Committee on Ways and Means.

This Association begs to present to your body a resolution adopted by it at its meeting held in April, 1912, which resolution reads as follows:

"That this Association records itself as favoring such reasonable revision of the cotton schedule, based upon differences in cost of production and other conditions, at home and abroad, as shall be consistent with the raising of revenue and the conservation of our home markets."

At a subsequent meeting of the Tariff Committee appointed by this Association, the following Resolution was also adopted:

"We favor the reasonable revision of the cotton schedule based upon figures at which importations are actually being made and can be made, as shown by the comparative manufacturers' selling price at home and abroad, as shall be consistent with the raising of revenue and conservation of our home markets."

Acting upon this Resolution, the Tariff Committee, at public hearings before the Ways and Means Committee, presented from time to time statements, in which this Association with frankness and at length gave information with regard to conditions affecting the industry and suggested such reductions as in the judgment of the Association could be consistently made without injury to the domestic industry of cotton manufacturing and at the same time in consistency with the policy of reasonable downward revision and Tariff for Revenue.

We recognize the propriety of there being adopted at this time such provision in the Tariff as would bring domestic and foreign manufacturers into competitive relation.

To the best of our belief the schedules suggested by this Association to the Ways and Means Committee, contained the lowest rates which could be in reason adopted without danger of injury to the industry of cotton manufacturing in this country.

We recognize, of course, that any suggestions made by ourselves are necessarily addressed to the discretion of the Honorable Committee charged with the consideration of the subject, and we can only say that we have with perfect frankness presented to the Committee all information bearing upon the subject which could be obtained by us. We have not asked the Committee to accept our unconfirmed statements upon these subjects, but we have in every instance referred the Committee to the findings of the Tariff Board, confirming and proving the correctness of the statements made by ourselves to the Committee. In addition we supplied the Committee with other authoritative data, fully confirming the statements of the representatives of the Association.

It is therefore with the greatest regret and consternation that we have seen the publication of rates on cotton products recommended by the Ways and Means Committee.

In all sincerity we state to your Honorable Body that if the rates thus suggested are made effective, we believe the injury to our industry will be unparallelled.

We earnestly enter a protest against the suggested rates and state with positive conviction on our part that the effect of these rates will be to transfer a far larger proportion of cotton manu-

facturing from the United States to foreign fields, where cheaper labor and other favorable conditions obtain, than the Ways and Means Committee can have any conception of.

In an absolute conviction of the truth of our statements we appeal to your Body not to make reductions in the rates as drastic as presented in the Bill referred to, and would conclude with the statement that if the Bill becomes enacted into Law, a condition of depression will follow in the industry of cotton manufacturing, which will in our judgment be appalling. Cotton manufacturing is an industry confined not to one community, but distributed throughout a large portion of our country, in portions of which it is the chief industry. It is an industry in which hundreds of thousands of employes are engaged, in which there are many plants, with many thousands of stockholders.

There is absolutely an untrammelled competition between manufacturing plants in cotton industry, so that there is no condition presented of a monopolistic industry, whose control needs in any sense to be broken.

In these views we respectfully present our earnest request that further consideration be given to the cotton schedule in the Bill referred to.

Very respectfully,

American Cotton Manufacturers' Assn.

W. A. Erwin, President.

C. B. Bryant, Secretary.

This letter was approved by a unanimous vote and without discussion, the president and secretary being directed to present the latter in person.

In the afternoon a reception was held at the White House, where the President and Mrs. Wilson greeted the members and guests of the Association. Before going to the White House the whole party assembled on the steps of the Treasury Building where a photograph was taken.

Wednesday's session began with an address by Secretary of Commerce Redfield Secretary Redfield began with a discussion of the tariff question. Our policy of protection, he claimed, had operated to destroy self-reliance on the part of American manufacturers, and to make them inefficient. He laid emphasis on the need of self-examination and the development of the highest efficiency, which was only possible when manufacturers were brought in active competition with the most efficient methods in other mills, abroad as well as at home. The trust question was referred to, and the Secretary called attention to the importance of determining whether the trusts were really efficient. He suggested that such an inquiry might well be made by the Bureau of Corporations. The Secretary then outlined a plan which was under consideration to establish a corps of commercial attaches who would be connected with the consular offices in foreign countries, but whose duties would be to make a systematic study of commercial and industrial conditions in the respective countries, a work that cannot now be done by the overtaxed consuls.

The following paper was then read by W. M. Steuart, chief statistician of the Department of the Census:

STATISTICS OF PRODUCTION, CONSUMPTION, AND STOCKS OF COTTON

By W. M. STEUART, Chief Statistician Bureau of the Census, Washington, D. C.

METHODS OF COMPILING

Cotton, because of its importance and world-wide use, has been for years the statistician's delight. With its growing importance it has also become a field of activity for the scientist, and there are now a dozen bureaus of the Federal Government that have to do with some phase of the cotton industry. In addition to these, a number of the States also maintain experiment stations and statistical bureaus, while numerous private organizations and individuals compile and publish data regarding cotton. It is safe to say that there is no other crop for which so much information is collected and published and at such frequent intervals. The activities of these agencies cover a wide range and we now keep track of seed selection, methods of planting, fertilizing, culture, harvesting, ginning, baling, grading, marketing and freighting; weather conditions during the growing and harvesting period; production, imports, exports, consumption and stocks. If statistics on these subjects are correctly compiled and intelligently presented, we could hardly want more.

The statistical record of cotton in the United States does not cover much more than fifty years. Probably the information compiled by the Treasury Department and submitted to Congress in 1836 was the first official report on the subject. According to this report, the world's production of cotton in 1790 was estimated at 490 million pounds, or 980,000 bales of 500 pounds each, that for the United States being placed at two million pounds, or 4,000 bales. The production in 1800 was estimated at 9,600 bales; in 1810, 16,000 bales; in 1820, 36,000 bales; and in 1831, 77,000 bales. The crop of the United States for 1839, as reported at the census of 1840, amounted to 1,653,722 bales, valued at $70,000,000. How insignificant these figures look when compared with the 16,000,000-bale crop of 1911, and for which the lint and seed was valued at $860,000,000. It is hardly possible to realize the wonderful development which has taken place in this industry.

In 1863 the Bureau of Agriculture, now the Department of Agriculture, was authorized to collect certain statistics, and, beginning with that year,

estimates of cotton acreage and production have been prepared annually. Aside from this and the regular decennial census reports, the statistical information concerning cotton collected by the government was limited, and, with the exception of the estimates of the Agricultural Department, was published so long after the marketing of the crop that it was of little value to the persons chiefly concerned.

The Census Bureau has three distinct lines of inquiry concerning cotton. The first, and the oldest, is the report of acreage and production, collected in connection with the census of agriculture. For these reports the information is furnished by the growers to the enumerators at each decennial census. The Act approved July 2, 1909, requires that a census of agriculture shall be taken every fifth year, and in the future statistics of the acreage and production as furnished by the grower will be compiled for each quinquennial census.

W. M. STEUART

The second, and next to the oldest, is the report of manufactures collected every fifth year. Prior to 1905 this information was collected every tenth year, but it is now covered by the quinquennial census of manufactures. The third, and latest, are the reports of ginnings, consumption, stocks, spindles, imports, and exports, as provided for in the Act of July 22, 1912.

While the importance of information concerning the actual quantity of cotton ginned was appreciated and several attempts were made to collect it, this method of arriving at the crop was not seriously considered by Congress until March, 1902, when a law was enacted which provided for the collection of statistics of cotton production as returned by the ginners and for the frequent publication of the same. This was followed by the joint resolutions of February 9, 1905, and March 2, 1909, which extended the scope of the cotton inquiry to include data regarding the quantity of cotton consumed, exported, and on hand for stated periods. The Act of Congress approved July 22, 1912, codified the prior enactments relating to cotton statistics and further extended the scope of the bureau's activity. This law controls all of the work of this character now done by the Bureau of the Census. Its principal features are:

First. There shall be ten reports of the quantity of cotton ginned to specified dates during each ginning season.

Second. There shall be monthly reports of the quantity of cotton consumed, cotton on hand, active cotton-consuming spindles, quantity of cotton imported and exported.

Third. Each report of the quantity of cotton ginned shall carry with it the latest available statistics concerning the consumption, stocks, spindles, imports and exports.

Fourth. That all publications containing statistics of cotton shall be mailed to all cotton ginners, cotton manufacturers, and cotton warehousemen, and to all daily newspapers in the United States.

Fifth. That all of the information furnished by any individual establishment shall be treated as confidential and used only for the statistical purpose for which it was supplied.

Sixth. Obligation of establishments to furnish the statistics and penalties for refusal to do so.

Seventh. The compilation of data concerning the production, consumption, stocks, and spindles in foreign countries.

The reports of ginnings which are not based on estimates have been regularly compiled since 1902 and are now generally accepted as giving a true statement of the crop and of the rapidity with which it is being placed on the market. The building up of a system that enables a prompt and accurate compilation of actual figures secured by a personal canvass of each ginner throughout the entire cotton-producing region requires an elaborate organization. The system has been perfected by years of patient work and its efficiency is preserved only by careful and constant attention. The personnel of the field force has to be constantly watched and continuous inspection made; efficient agents are encouraged by retention, and, when possible, by promotion, while the careless and inefficient are supplanted by those who can and will give the work the proper attention. There are 745 special agents now employed to collect cotton statistics, and, as a rule, each agent attends to the work in a single county. Some counties, however, have been subdivided and have two agents, while, in a few instances, a single agent canvasses more than one county. The agents are required to be residents of their respective districts and must be men of standing, having the confidence of the ginners and others from whom they collect statistics. While the law provides penalties for refusal to furnish the information, it is seldom that reference has to be made to them. It is appreciated that the statistics are much more apt to be exact and truthful if they are given voluntarily than they would be if they were obtained through fear, or by threat of prosecution. Therefore, the office has constantly endeavored to secure the cooperation of the ginner and the manufacturer by carefully guarding the secrecy of the data and also by sending copies of the reports to

all the establishments immediately after they are printed, and in other ways assisting them in the proper use of the statistics. The agents, therefore, must be men who can maintain the dignity of the law, and, at the same time, inspire such confidence that there will be no hesitation on the part of any establishment to furnish the data.

At the beginning of the season each agent is required to sign a contract covering the work of the season. This contract specifies the number of reports to be collected, the character of the data to be included in each, and the date to which the canvass for each report relates. The compensation is based on a piece-price basis, each report being treated as a unit. If the agent fails to forward a report within the time limit given or in a satisfactory condition, the compensation for it is deducted from the agent's voucher. Among other requirements, these agreements contain the following provision:

"I also agree that I will not act, during the period covered by these reports, as correspondent for persons interested in cotton statistics, and that I will hold as strictly confidential, in conformity with my official oath, all information secured in my official capacity, including the names and addresses of the ginners, as well as their individual and collective returns."

To collect the statistics we start with the ginnery and find that there were 29,116 on the list for the season of 1912-13. Of this number 25,116 had ginned some cotton from the crop of 1912 prior to January 16, 1913. Although a few additional ginneries will be operated after this date, this is about the number active at some time during the ginning season, the remainder, or 4,000, were idle during the entire season. If an establishment ginned only one bale of cotton and then shut down for the rest of the season, that single bale and that establishment are included in each subsequent report for the season, and the ginnery is counted as one that was active. Each ginnery is carefully listed, its exact location and post office address are shown, and the list is constantly revised by the agents in each county who are required to report promptly all changes in the names and addresses.

Of the 25,116 establishments that have ginned some cotton during the season just closing, in no instance have the special agents reported their inability to secure satisfactory statistics. Some ginners are disinclined to furnish the data, and, during previous years, some cases have been referred to the Attorney-General for prosecution. A letter from the prosecuting attorney of the district in which the ginner resided invariably resulted in his furnishing the data. Since the Act of July 22, 1912, there has been no case of absolute refusal to make the reports. In a few cases, rather than institute legal proceedings, the agent secures the data by indirect methods. Only a few weeks ago I was personally visiting some of the agents in Georgia, and one told me of a ginner in his district who was a very nice old man, but who had ideas of his own about furnishing information to the government and had persistently declined to report the number of bales he ginned. The agent went to a relative of the ginner, who is employed in the ginnery and who knew as much about the operation of the establishment as the proprietor, and said: "Here, Tom, I don't want to enforce the law on the old man; won't you furnish the figures?" He said, "Certainly," and has been supplying them regularly ever since.

It sometimes happens, particularly during the latter part of the season, that the agent is unable to see the owner or operator of the ginnery. In such instances, the information is secured from any one having personal knowledge of the number of bales ginned and the agent notes the facts on the card. This permits the inclusion in the reports of the data for every ginnery.

The canvass begins and ends on the same day in all districts. As a rule, the agents are allowed one week in which to secure the reports from all the ginneries in their districts, and they are required to add the number of bales for each ginnery so as to obtain the total for the district, and to send this total by telegraph, the message being filed in the telegraph office by not later than 6.00 p. m. on the date set for the canvass to close. The same form of message is used by all agents:

"Director of Census,
Washington, D. C.
Smith County.- Twenty-nine thousand five hundred and fifty-two (29,552) bales, including 217 round and three sea-island. Jones."

These telegraph summaries are tabulated in the office and the results published at 10.00 a. m. on the day following that upon which the canvass closes. These reports being based on the telegrams from more than 700 agents may contain errors or omissions, and, as they are subject to correction, they are designated as "preliminary." As stated, the telegrams are compiled by the agents from the reports secured from the individual ginners. These signed reports are about the size of a postal card and are of uniform size.

The individual reports of the ginners are mailed by the agents to the office immediately after or at the same time of sending the telegram. Upon their receipt at the office in Washington, the number of bales of cotton reported on each as having been ginned is added and the result compared with the agent's telegram. If there is a difference, the agent is required to give a satisfactory explanation or acknowledge the error. Some errors are bound to occur in such a large statistical work, but they are, in the aggregate, very slight. It is the practice to give in each report the corrected total for the next preceding report, thus the report of September 25th shows that the report for September 1st was 1,009 bales less than the correct total.

The greatest difference, 34,365 bales, was reported for October 18th, and formed only one-half of one per cent. of the total amount reported as having been ginned to that date. For this report 19 telegrams failed to reach the office in time to be included, and the estimates made were slightly under the actual figures. It is the practice, in such instances, to use the total quantity of cotton returned for the county at the last report date, plus an estimated amount based on the increase during the period in the surrounding counties. The office endeavors to be perfectly frank in all of these matters and to make public the correct total as soon as it is available. The non-

receipt of the telegraphic messages was due largely to the failure of the telegraph companies to deliver them during the night preceding the publication of the report. Since the publication of this report, however, the companies have made special effort to deliver the messages on cotton ginned promptly and for all of the subsequent reports for this season there has been very little trouble of this character.

As about 30,000 ginners make individual reports ten times during each ginning season, there are nearly 300,000 of these card reports received at the office. In addition to being added and the totals checked with the agents' telegram for each report, these card returns are carefully examined to see that no ginner has reported less cotton ginned than was returned at a previous report. Each report must carry the total amount ginned during the season up to the date to which the report relates. If any errors of this character are discovered, they are considered serious and the agents are apt to suffer accordingly.

The average ginnery is not an extensive establishment, and a considerable number have only incomplete record of their operations. To encourage them to keep records and lead to more accurate statistics, the Bureau of the Census distributes gratuitously a Ginner's Record Book. This book is made of strong paper, has a good, serviceable binding, and a string to hang it up with. There were about 10,000 copies of this book distributed during the season of 1912-13, and the number of requests for it is increasing.

As a final check on the agent's work, an entirely independent call is made by the Bureau on each ginner to report the total number of bales ginned by him. This call is sent by mail about March 10th of each year. In response to this request, the ginners report directly to the office. The reports are compared with those previously made by the agents and any differences harmonized.

The counties in which agents are employed to collect these statistics cover practically all in which cotton is grown. There are, however, about 200 active ginneries located in counties in which there is so little cotton that it would not be practicable to employ a person to collect the data. The returns for these ginneries are therefore secured by mail. For the crop of 1911 there were only 80,614 bales of cotton ginned in these counties, or about one-half of one per cent. of the crop, so any error in the figures for these counties could have no appreciable effect on the aggregate.

The statistics of cotton ginned are reported in running bales—round bales separately. There are great differences in the average weight of the square bale throughout the cotton belt. The weight is apt to grow lighter as the season advances, and, for other reasons, there is a great variation. The differences are pronounced, ranging from less than 430 pounds for a number of counties in Georgia and North Carolina to 570 pounds for counties in Mississippi, Tennessee and Arkansas. In order to measure accurately the volume of the crop, it is necessary to reduce these various bales to pounds. To make this computation the agents are required to obtain from local weighers, merchants and others who handle cotton, statistics of the number of bales actually weighed and the actual weight of such bales. These data are forwarded in two installments, one of cotton weighed prior to November 14th, and the other of that weighed between November 14th and January 1st. The number of weights reported must be approximately half the number of bales ginned. These weights are averaged and the average for each county applied to the production of that county, to ascertain the number of pounds. The pounds for each county are added to obtain the total for the State and the State totals combined for the aggregate of the United States.

Sample. **COTTON GINNER'S RECORD** 27

11—351

DATE OF GINNING.		NAME OF PERSON FOR WHOM GINNED.	SEED COTTON GINNED.	LINT OBTAINED.			PRICE FOR GINNING.	
				GROSS WEIGHT OF BALE	THE BALE NUMBER	MARK.	CHARGE.	PAID.
Month.	Day.		Pounds.	Pounds.				
10	4	John Grey	1386	504	15	L	1 50	
10	5	John Grey	1250	480	17	L	1 50	
11	2	John Grey	1350	484	24	L	1 50	

In addition to the production of cotton as obtained from the ginners, there are about 900 establishments which delint cotton seed, thereby obtaining a short fiber called linters. This fiber is employed as a substitute for cotton in many lines of manufacture in which a better grade of cotton would otherwise have to be used. It is consumed principally in the manufacture of batts, felts and cheap yarns. It is therefore necessary to obtain data of this cotton and statistics of this are secured twice during the season, January 1st and March 1st. They are reported on a card schedule.

To collect the monthly statistics of the consumption and stocks of cotton it is necessary to secure each month reports from approximately 2,100 establishments that consume raw cotton or linters and 2,600 independent warehouses, compresses, and other public storage places. Of the former about 1,125 are equipped with spindles designed to spin cotton, while a number of the remainder spin the fiber mixed with wool in the manufacture of merino yarn. The establishments

for which the statistics are collected include not only the cotton mills, but woolen and worsted mills and hosiery and knit goods factories in which raw cotton is used as a material, felting, batting, mattress, and bedding factories, establishments manufacturing absorbent cotton, and, in fact, every place in which raw cotton is used as a material. Each of these makes a monthly report on a card schedule.

The warehouses, compresses and public storage places also report monthly on a card schedule.

The reports for the cotton-consuming establishments, warehouses, etc., located in the important cotton-producing counties of the Southern States are, of course, secured by the local special agents. Reports for those located elsewhere in these States and in the Northern States are secured, for the most part, by mail, though a few traveling agents are employed from time to time. These establishments all furnish the information; there are very few that even hesitate to ask for explanation. Unlike the ginners, there are none who decline to supply the data.

The statistics of imports and exports of cotton for the monthly reports are collected by the Bureau of Foreign and Domestic Commerce from the collectors of the several customs districts. These reports are turned over to the Bureau where they are summarized and the totals prepared. A new feature in these reports has recently been added, namely, that of ascertaining the country of production of the foreign cotton imported. Prior to this departure, statistics of imports have always been published showing the totals by the country from which imported.

To summarize, there are 36,000 establishments that furnish information of some character for these various reports on cotton, and there are more than 350,000 separate returns received by the office during the year. These must all be checked, examined, tabulated, and the results published by fixed dates, which follow closely the dates to which the reports relate. The magnitude of the undertaking, the amount of detail involved, and the rapidity with which the work must be done can hardly be appreciated by anyone who has had no practical experience in it.

These statistics are distributed by 27 distinct publications issued during the year:

Ten preliminary reports showing the quantity of cotton ginned to specified dates.

Twelve preliminary reports showing the quan-

Sample.

MANUFACTURES
COTTON GINNING

Department of Commerce and Labor
BUREAU OF THE CENSUS

B—1016 1

COTTON SEED CRUSHED AND LINTERS PRODUCED, CROP OF 1912

State, Georgia County, Bibb P. O., Macon.
Location of Mill, Macon.
Name of Mill, Jones Cotton Oil Mill
Name of Owner, Jones Cotton Oil Mill Company
General Office at Macon

CROP OF 1912	SEED CRUSHED	LINTERS PRODUCED	
	TONS	BALES	GROSS POUNDS
Quantity to date of this report	10,000	100	50,000
Estimated quantity after date of this report	100	10	5,000
Quantity of linters not baled, and not included in above			

March 1, 1913

William Jones.
(Signature of person furnishing the information)
President.
(Official position)

Sample

B—1073o
MANUFACTURES
COTTON GINNING

Department of Commerce and Labor
BUREAU OF THE CENSUS.

SEVENTH REPORT—CROP OF 1912

This Report must include all Cotton ginned from crop of 1913, prior of December 13.

File No. 3560 December 18, 1912.
State, TEXAS; County Hill
Location of Ginnery 4 miles N.W. from Bynum.

	NAME.	POST-OFFICE ADDRESS.
Owner	John Jones,	Bynum R. D. Route 1
Operator	Sam Brown,	Bynum R. D. Route 2

Number of bales of cotton ginned from crop of 1912, prior to December 13:
Square 25
Round

Remarks:

See Instructions Other Side.

Sam Brown.
(Signature of person furnishing information.)

11—0118

tity of cotton consumed, imported, exported, and on hand, and the number of active consuming cotton spindles, relating to the calendar months.

Two preliminary reports on the quantity of cotton seed crushed and of linters obtained.

A pamphlet showing the quantity of cotton ginned prior to December 13th, by counties.

An anuual report on the production of cotton, addressing machine from the stenciled mailing list for cotton publications and sent to the printing office in advance of the day of issuing the report. At the time the report is made public a copy is sent the printer. It is immediately printed on the preaddressed cards and sent directly to the post office, thus distributing the information with the greatest dispatch.

MANUFACTURES COTTON STATISTICS — Department of Commerce and Labor — BUREAU OF THE CENSUS — Sample. — S. 1

COTTON CONSUMED AND STOCKS HELD BY MANUFACTURERS
(January, 1913)

STATE Mass. | COUNTY Bristol | POST-OFFICE ADDRESS Fall River.

NAME OF ESTABLISHMENT Smith Cotton Mills.

KIND OF COTTON.	COTTON CONSUMED. (Include all raw cotton and linters passed through the picker or otherwise consumed during the month.) BALES.	COTTON ON HAND. (Include all raw cotton and linters actively in the establishment at the close of the month.) BALES.	SPINDLES. (Include all cotton spindles, both ring and mule, which consumed cotton during the month regardless of the time employed. Do not include doubling and twisting spindles or spindles consuming cotton mixed with some other fiber and not known as cotton spindles.)
Upland—Square,	1,000	5,000	
Upland—Round,			
Sea-Island,	100	400	
Linters,			
Foreign (state kind), Eg	200	600	
TOTAL,	1,300	6,000	100,000

THIS IS TO CERTIFY that the information contained in this report is complete and correct to the best of my knowledge and belief.

Wm Brown (Signature of Special Agent.) — John Smith, Treas. (Signature of person furnishing information.)

[51—192] 13—6851

which contains information regarding the production in foreign countries.

An annual report on the supply and distribution of cotton, which also contains some information regarding the quantity of cotton consumed and

Notwithstanding the mass of detail involved in the compilation of the cotton reports and their undoubted importance, they have been remarkably free from criticism. Certain individuals have at times found fault with the statistics and the

MANUFACTURES COTTON STATISTICS — Department of Commerce and Labor — BUREAU OF THE CENSUS — Sample. — S. 2

COTTON IN WAREHOUSES AND IN COMPRESSES
(JANUARY 31, 1913)

STATE.	COUNTY	POST OFFICE	LOCATION
Mass.	Bristol	Fall River.	

NAME OF WAREHOUSE OR COMPRESS Merchants

NAME OF OWNER Fall River Cotton Company

QUANTITY OF COTTON AND LINTERS, REGARDLESS OF THE YEAR OR LOCALITY OF GROWTH, IN WAREHOUSE OR COMPRESS AT CLOSE OF BUSINESS JANUARY 31, 1913.	KIND OF COTTON	Gathered crops (number)
	Upland—Square	4000
	Upland—Round	200
	Sea-Island	500
	Linters	100
	Foreign (state kind) Eg.	388
	TOTAL	5200

THIS IS TO CERTIFY that the information contained in this report is complete and correct to the best of my knowledge and belief.

Wm Brown (Signature of Special Agent.) — Thos. Jones, Agent (Signature of person furnishing information.)

[52—193] 13—6851

the number of cotton spindles in foreign countries.

The preliminary reports are in the shape of postal cards, of which the following are samples:

The prompt distribution of the information is effected by giving the reports to the Associated Press, representatives of cotton exchanges, telegraph companies, and all newspapers promptly at 10 a. m. on the morning of the issue. The postal cards carrying the statistics are addressed on the

methods used. In the assembling of the data in the bureau every safeguard is placed around them and special precautions have been taken to prevent the premature or the improper use of the information returned. While some telegrams are received prior to the day of the report, the bulk of them reach the Bureau early on that morning. On the morning of the report selected clerks come to the office at six o'clock. They are given the telegrams and locked up in a room where they

remain until after the report is made public. The door of the room is constantly watched by a man detailed for that purpose. At eight minutes of ten I present myself, rap on the door, and am handed a sealed envelope. The door is again locked. I go straight to the office of the chief clerk, where the newspaper representatives and others are waiting. The envelope is opened in the presence of them all. The reports are laid face down on a desk. At 10 a. m. promptly I say "Go." Each man grabs his copy, rushes to the telephone or telegraph instrument previously designated for him, and the information is scattered over the country.

During the subsequent discussion Mr. Steuart in reply to a question stated that the large quantity of linters, which had been a feature of recent cotton ginning reports had been investigated by the Department, and it was found that the increase was due, at least in part, by the improvement in the machinery used for cleaning the seed.

Dr. D. E. Douty, of the New York Conditioning and Testing Co., presented the following paper:

THE VALUE OF ACCURATE TESTING IN THE COTTON INDUSTRY

By D. E. DOUTY, Manager New York Conditioning and Testing Co., New York City

The statement of value in terms of money, produces in most of us a clearer conception and more responsive interest than in any other system of units. Money units are the very first units of measurement of value taught us in our childhood and by their constant use we become most adept in judging the advantage to ourselves of a transaction or a policy.

In considering the cost of a material to be purchased or used by the pound we are apt to consider the price per pound, and make decision between a number of offers for furnishing the materials primarily upon the quoted rate, leaving as secondary considerations such questions as quality, methods of packing, amount of waste, state of the material as delivered, etc.

The purchaser insists upon the invoice being computed accurately and the amount extended to the nearest cent and will often argue for discounts of fractions of a per cent. At the same time the consignment may have been received under conditions which would tend to increase the unit rate 5, 10, or 15 per cent.

In the brief space allotted to me I wish to call to the attention of the Association some of the ways in which secondary elements in the handling of your fundamental material, cotton, affects the costs and introduce variations into the quality of your products.

Every contract or bargain for a market transaction contains specifications defining the qualities of the material which is the object of the transaction.

Sometimes these specifications are very meager, as for example the matching of a sample, the reproduction of a trade grade, or a collection of general terms depending for their interpretation upon the judgment and skill of the parties to the contract.

Some of the large associations, representing great manufacturing and engineering interests have devoted much time to the preparation and issue for the assistance of their members and the public, of standard specifications. The American Society for Testing Materials has as its fundamental purpose the preparation of Standard Specifications and the development of methods of testing, the accurate measurement of quality; of the great engineering materials like iron, steel, cement, brick, timber, etc.

The textile industry, one of the largest of our

D. E. DOUTY

country, coming directly in touch with every man, woman and child, has lagged far behind most of the other industries in the standardization and enforcement of contracts and specifications.

In the cotton industry there are definite qualities which can be made the basis of standard specifications and which can be accurately determined by properly devised methods of testing.

In the raw cotton there is the grade, the staple, the moisture, content, method of packing, etc.; in the yarn there is the oil, the moisture, the twist, count, tensile, strength, elasticity, uniformity, etc., and in the finished fabric; the yarn with its properties as above, the weave and threads per inch, the tensile strength, sizing material and color.

In the discussion of the value of accurate tests of these qualities it becomes necessary for me to limit myself and I will therefore consider the de-

termination of moisture in raw cotton and yarn and the effect which the moisture content has upon the count and tensile strength.

It is a well known fact, called to the attention of the members of this Association several times, and a matter of common knowledge with most textile men that all textile fibers vary in the amount of moisture they contain with the amount of water vapor present suspended in the surrounding air. The presence of moisture as vapor in a given space is independent of the presence or absence of air in the same space, and we should, therefore, not speak, as many do, of the weight of water vapor in a cubic foot of saturated air "but the" weight of a cubic foot of saturated water vapor.

Water vapor in a given space is saturated when the addition of further vapor would cause condensation into drops and the formation of dew.

The amount of saturated water vapor which can exist in a given space depends upon its temperature. Table I gives the amount in grains at each 10° (F) between 20° below zero and 110° which exist in a cubic foot at saturation.

TABLE I

Absolute Humidity of Cubic Foot Saturated Water Vapor

Temp. Deg. F.	Wt. Grains
—20	0.166
—10	0.285
0	0.481
10	0.776
20	1.235
30	1.935
40	2.849
50	4.076
60	5.745
70	7.980
80	10.934
90	14.79
100	19,766
110	26.112

The Curve in Figure 1 (appended) shows the same thing in a graphic way and is known as the saturation curve of water vapor.

The actual amount of water vapor present at any time expressed in some unit of weight or measure is called the absolute humidity.

If the actual amount is less than the amount necessary to saturate the vapor at the existing temperature, the percentage that it is of the saturation amount is called the relative humidity. For example, the absolute amount of saturated water in a cubic foot at 70° F. is 7.98 grains. If we had a cubic foot of water vapor in which only 3.99 grams of water was suspended there would be only half enough water to produce saturated vapor at that temperature and we would say that the relative humidity was 50 per cent.

If 5.98 grains, 3/4 of 7.98 of water were present in the cubic foot, the relative humidity would be 75 per cent. That is, in the first case there would be present 50 per cent. and in the second case 75 per cent. of the amount of water necessary to saturate the water vapor at 70° F.

I have gone explicitly into this matter because a clear understanding of that which is to follow requires it.

It is customary to express the moisture condition of the atmosphere in terms of relative humidity because it is much easier and more convenient to determine the relative humidity at any time.

The amount of moisture present in cotton fiber at any given temperature whether in the raw state or as yarn depends upon the relative humidity of the surrounding water vapor.

Raw cotton or cotton yarn may be made absolutely dry by putting it in a specially constructed oven called a conditioning oven and submitting it for some time to a current of hot air at a temperature of several degrees above the boiling temperature of water. The water contained in the cotton is vaporized and carried off by the current of hot air, only the dry fiber and non-volatile portions remains.

If cotton or cotton yarn dried in this manner is again subjected to the atmosphere containing water vapor it will absorb or regain moisture. The amount absorbed is generally expressed as the percentage it is of the dry weight and is called the regain of the material. That is, if 100 pounds of absolutely dry yarn is submitted to an atmosphere containing water vapor and after being allowed to absorb all it will take up at that humidity, weighs 112.5 pounds; the regain is 12.5 per cent.

As stated above, the amount of regain will depend on the relative humidity and the temperature.

Table II gives a few values taken from the very excellent work of Mr. Hartshorne and given by him before the 1910 meeting of the National Association of Cotton Manufacturers. (Vol. 90, Trans. National Association Cotton Manufacturers, page 281.)

TABLE II

Cotton Regains at Different Humidities and Temperature

Relative Humid.	Temperature Fahrenheit 35°	65°	85°	100°
20%	3.96%	3.74%	8.60%	3.50%
30	4.98	4.69	4.52	4.42
40	6.00	5.65	5.45	5.30
50	7.16	6.75	6.51	6.33
60	8.57	8.08	7.78	7.57
70	10.31	9.72	9.36	9.11
80	12.42	11.71	11.28	10.98
90	15.23	14.69	14.15	13.77
100	22.07	20.80	20.03	19.50

You will note that at a relative humidity of 60 per cent. at 65° Fahrenheit the regain is approximated 8 per cent. This humidity condition is somewhat below the yearly average condition in Europe and hence the European trade has adopted 8 1/2 per cent. as the standard regain for cotton. Those who have given the matter careful consideration in this country are generally of the opinion that 7 1/2 per cent. regain would be a more equitable standard for America.

What value to the cotton manufacturer is a knowledge of the amount of moisture present in the cotton fiber?

How will it assist in the regulation of his business and how will it affect the quality of his product? I will attempt to answer those questions in terms of that language which is familiar to all of us; money.

If you are a purchaser of raw cotton at the present time you pay for your material on invoice weight, and the amount of moisture it contains will depend upon its condition at the time of weighing.

Let us go back to the possible condition at the time of baling. The most of the cotton throughout the South is ginned and baled during the months August to December, and its moisture content at that time, allowing that there is no addition of water by actual spraying or other means, will depend upon the weather conditions.

Through the kindness of the U. S. Weather Bureau I have obtained the values for the relative humidity and temperature during each day of the year 1912 at a number of the cotton centers of the South. With these values and the cotton regain as determined and given by Mr. Hartshorne in the paper referred to above I have computed the regain which would have taken place in absolutely dry cotton during each day of the year if exposed to the atmosphere. These values for the months August to December and the month of January, 1913, for Galveston, New Orleans, Mobile, and Charleston are shown graphically on Figure 2. Each space horizontally represents one day and each space vertically represents 1 per cent. regain.

(See Figure 2. attached.)

The points have been connected by the fine line and the irregularity of this line shows quite clearly the rapidity of variation in the possible regain of the cotton which is ginned and baled during these months.

Taking each 10 days of the period and averaging the value we obtain the heavier smoother curve. The heavy dotted line represents the proposed standard regain of 7 1/2 per cent.

Note in every case the small number of points that fall below this line, and the large number of points that during the months of October, November, December and January which rise above 10 per cent.

Now, as a purchaser of cotton, at what moisture content has the cotton which you have purchased been baled? Suppose you contract for 100,000 pounds invoice weight of Louisiana cotton in the New Orleans district and it happened to be ginned and baled during the second week in October when the average regain would have been about 14 per cent. or 6 1/2 per cent. in excess of the suggested standard regain.

The dry weight would have been 87,719.4 pounds and the conditioned weight, using 7 1/2 per cent. regain, would have been 94,298 pounds. The invoice weight would therefore include 5,703 pounds excess water which at 12 cents per pound would amount to $684.23.

If you purchase yarn a similar condition is liable to occur; the only difference being that the cost per pound of excess moisture is much higher.

Suppose you contract for 100,000 of Southern single warp 20s at 22 1/2 cents and it is spun in a mill where the average humidity is 75 per cent. at 70° Fahrenheit. The regain of the cotton at that condition is 10.5 per cent. or 3 per cent. in excess of the proposed standard. If the invoice weight is 100,000 pounds the dry weight would be 94,498 pounds and the conditioned weight (7 1/2 per cent. regain) would be 97,285 pounds. The excess moisture over the suggested standard regain of 7 1/2 per cent. would be 2,715 pounds, costing at 22 1/2 cents per pound, $610.88.

In both of the above cases the excess moisture could have been determined by tests that would have cost for the raw cotton about $60.00 or 0.5 per cent. of the total amount of money involved and for the yarn about $80.00 or 0.3 per cent. of the total money involved.

You often hear the statement that we do not need to establish in this country a standard moisture content or standard regain upon which to base our transactions in textile materials. That our climate is not as moist as England and the continental countries of Europe. This argument, even if it at some time had a value, must now be abandoned because of the development of artificial humidification. There are about a half dozen companies prepared to install in any mill humidifying equipment which they guarantee will keep the shed in a uniform moisture condition throughout the year and some of these companies have actual mill records which substantiate their claim to a surprising degree. It is now possible to establish in the mountains of the Carolinas, on available water power, a cotton mill and produce therein, according to choice, the climate of New Bedford, Mass., or Manchester, Bolton or Lancashire, England. These systems even have the advantage over the natural humidity in that they keep conditions uniform.

Cotton gins better, spins better, weaves better and sells better when it is moist. The chances are that with the rapid increase in the installation of artificial humidifying apparatus the purchasers of cotton material will purchase an increasing amount of moisture unless they take some steps to agree upon a standard amount, and then test their materials.

The humidity affects any test which involves the weight.

The tests which have been made at the Bureau of Standards show very definite effects of the difference of humidity upon the yarn count, tensile strength and elasticity.

As the relative humidity changes from 45 per cent. to 85 per cent. at ordinary room temperature 65° to 70° Fahrenheit the yarn count decreases about 55 per cent.

The results of 1,150 tests at the Bureau of Standards ranging from 13s to 100s show that between the range of humidity from 45 per cent. to 85 per cent. at 70° F. the tensile strength increased 11.18 per cent.

Attention is called to this variation in order to bring out the importance of obtaining values for these properties under constant conditions.

Instead of reading the paper, Dr. Douty gave an informal talk on the various points and illustrated his remarks by wall charts Those present were deeply interested in the subject, as was shown by the general discussion which followed. So great was the interest in the question of conditioning and moisture regulation that a resolution was adopted authorizing the president to appoint report at a future meeting.

Arnold B. Sanford then spoke on the peril a committee to investigate the subject and of Japanese competition. He stated that that there were 2,600,000 spindles in Japan, operated 22 hours a day, the wages averaging 16 cents a day for women and 20 cents for men. Last year, Mr. Sanford said, Japan exported 112,000,000 pounds of cotton yarn, valued at $25,000,000, and it was certain that this competition would prove ruinous if the new Underwood cotton schedule became a law. Lewis W. Parker endorsed the position taken by Mr. Sanford and called attention to the fact that the Underwood cotton rates on yarn were relatively much lower than on cloth, and for this reason the proposed measure hit the spinners even harder than the cloth manufacturers.

The last session of the convention on April 10 began with an earnest statement by R. M. Miller, Jr., in regard to tariff revision, in which he laid emphasis on the peril to the industry by reason of the drastic cut in the cotton rates as proposed by the new Underwood bill. The discussion then became general, and the cotton manufacturers of the country were exhorted to devote all their energies to convince their representatives and senators of the necessity of beginning tariff revision with rates that would not prove ruinous to the cotton trade. Among those who spoke were President Erwin, Thomas H. Rennie, W. S. Lee, of the Southern Power Co. and S. B. Tanner. The report of the committee was adopted by a unanimous vote, and arrangements were made to have a copy of the Underwood tariff bill mailed to every member of the Association.

Next came the reading of the following resolutions, which were adopted without dissent:

Resolved: That a Committee on Publicity, composed of Messrs. Stuart W. Cramer, R. M. Miller, Jr., and Lewis W. Parker be appointed for the purpose of disseminating correct information as to general conditions in the operation of cotton mills, and that C. B. Bryant be made Secretary of the Committee.

Resolved Further: That the Committee be authorized to spend such moneys as in their judgment is necessary for the promotion of this purpose.

Resolved: That the Association indorse most heartily the recommendation of Secretary Redfield, for the appointment of Commercial Attaches at important embassies.

Resolved: That the thanks of the Association be extended to Messrs. Hibbs & Co. for furnishing our convention cotton quotations; to the press for their continued loyal support; and to the New Willard Hotel, for their very courteous treatment of our members and guests.

It was announced that the Internation Cotton Federation had invited the American Cotton Manufacturers' Association to send representatives to the Cotton Congress to be held this year at the Hague, and a resolution was adopted authorizing J. P. Gossepp, T. H. Gossepp, E. F. Woodside and John Sprint Hill, members of the Association to attend the Cotton Congress as representatives of the American organization.

The election of officers resulted as follows:

President, Stuart W. Cramer, Charlotte, N. C.

Vice-President, T. I. Hickman, Augusta, Ga.

Secretary and Treasurer, C. B. Bryant, Charlotte, N. C.

Board of Governors, George H. Lainer, of Georgia; Fuller E. Calloway, of Georgia; J. D. Hammett, of South Carolina; A. A. Thompson, of North Carolina; Scott Maxwell, of Alabama; Arthur R. Sharp of Massachusetts, and C. B. Armstrong, of North Carolina.

Following is a list of those present:

ALABAMA

Hill, John, Atlanta.
Jones, P. R., Florence.
Maxwell, Scott, Cordova.
McCall, M. M., Opelika.
Moody, C. H., Alabama City.
Rennie, T. H., Pell City.
Taylor, Val., Ellawhite.
Turner, J. S., Birmingham.

CONNECTICUT

Dee, William V., Bridgeport.
Stead, C. Frederick, Bridgeport.

GEORGIA

Albert, H. H., Atlanta.
Barn, J. M., Atlanta.
Chappee, E., Atlanta.
Carter, A. B., Athens.
Hickman, T. I., Augusta.
North, F. G., Atlanta.
Peabody, D. W., Atlanta.
Rankin, W. T.
Smith, J. Jaskins, Atlanta.
Strobhar, W. G., Savannah.
Taylor, Mrs. R. A., Atlanta.

LOUISIANA

Byars, H. W., New Orleans.
Chaffee, Block, New Orleans.
Lacey, H. B., New Orleans.
Mather, Geo., New Orleans.
McLellan, A. W., New Orleans.
Shepard, Chas. W., New Orleans.
Stewart, W. P., New Orleans.

MAINE

Swift, Mrs. Emma and Daughter, Gardiner.

MARYLAND

Fox, A. J., Baltimore.
Nichols, Wm. G., Baltimore.
Nimberbry, C. E., Baltimore.
Stone, Wm. H., Baltimore.

MASSACHUSETTS

Amnann, L. A., Chicopee.
Ashworth, Geo., Fall River.
Ashworth, Henry, Fall River.
Ashworth, Robert C., Fall River.
Bahnson, A. H.
Pannon, J. F., Mansfield.
Bishop, F. H., Boston.

Cate, Alfred P., Fitchburg.
Christiansen, Eau S., Haydensville.
Clark, C. H., Boston.
Coffin, Melville, Boston.
Comins, Frank E., Boston.
Cooper, Jas. A., Whitinsville.
Dale, Samuel S., Boston.
Lanker, Daniel J., Boston
Fearing, Edw. J., Boston.
Firth, William.
Fowler, E. T., Westford.
Fuller, A. S., Boston.
Greene, E. F.
Hale, Frank J., Boston.
Hale, F. J., Boston.
Hathaway, E. F., Boston.
Hobbs, Franklin W., Boston.
Holcomb, Clark W., New Bedford.
Holmes, Chas. M., New Bedford
Holt, L. S., Jr.
Houghton, L. T., Worcester.
Howe, J. C., Boston.
Hunneman, Wm. C., Boston.
Iler, Alonzo, Canton Junction.
Jackson, H. K., Boston.
Jamieson, Jos. E., Pawtucket.
Klebart, F. S., Boston.
Lord, Henry G., Boston.
Lowe, A. H., Fitchburg.
Lowe, Stephen C., Boston.
Macomber, W. M., Boston.
Malone, A. T., Boston.
Mann, Fred E., Boston.
Marston, J. P., Boston.
Mitchell, G. B., Boston.
Mitchell, W. A., Lowell.
Nagle, Frank L., Boston.
Nichols, Mr. and Mrs. Arthur B., Boston.
Noone, W. R., Boston.
O'Malley, Chas. J., Boston.
Orr, Chas. F., South Attleboro.
Parks, F. W., Fitchburg.
Potter, A. C., Boston.
Potter, E. C., Boston.
Potter, Frederick T., Boston.
Richardson, Willoughby F., Boston.
Riley, Chas. E., Boston.
Robbins, M. F., Jr., Boston.
Rooney, E. H., Whitinsville.
Sharp, A. R.
Smith, Jas. J., Boston.
Strang, Jas., Indian Orchard.
Walker, Geo. W., Fall River.
Wattles, A. S., Canton Junction.
Whitaker, J. D., Boston.
Wilger, S. S., Boston.
Woodbury, C. H., Boston.

MISSISSIPPI

Wainwright, T. L., Stonewall.

NEW HAMPSHIRE

Hanson, S. L., Dover.

NEW JERSEY

Seydel, Herman, Jersey City.

NEW YORK

Bacon, J. Murray, New York City.
Bonnet, Fred S., New York City.
Bonner, P. R., New York City.
Brinckerhoff, M. V. B., New York City.
Broadbent, J. T., New York City.
Brooks, Chas. W., New York City.
Bruyn, F. S., New York City.
Burnett, A., New York City.
Connell, Geo. E., New York City.
Daniels, F. Tyler, New York City.
Dickson, L. C., New York City.
Dorvell, Robert L., New York City.
Dowling, Thos. R., Jr., New York City.
Evans, W. H., New York City.
Feldenheimer, Jos., New York City.
Foster, Philip J., New York City.
Glacher, Gustave, New York City.
Haines, H. A., New York City.
Hand, E. S., New York City.
Harper, E. J., New York City.
Herx, C. O., New York City.
King, Wm. V., New York City.
Knight, E. G., New York City.
Leslie, H. M., New York City.
Lewis, R. E. L., New York City.
Lyle, J. L., New York City.
MacLea, Robt. K., New York City.
McGraw, Joseph, New York City.
Miller, Gardiner H., New York City.
Mitchell, G. R., New York City.
Neville, Geo. W., New York City.
Paulson, Leonard, New York City.
Pennall, E. C., New York City.
Poucher, W. R., New York City.
Price, T. H., New York City.
Quilhot, Wm. K., Amsterdam.
Roberts, S. E., New York City.
Row, R. R., New York City.
Sanford, A. B., New York City.
Southerland, V. R., New York City.
Steele, S. H., New York City.
Strest, John D., New York City.
Suffern, R. A., New York City.
Sullivan, Jos. D., New York City.
Symms, W. B., New York City.
Walden, E. B., New York City.
Waldin, H. S., Amsterdam.
Wendell, Willis, Amsterdam.
Wickham, Frank D., New York City.

NORTH CAROLINA

Adams, B. B., Faus Oaks.
Alexander, S. B., Charlotte.
Armstrong, C. B., Gastonia.
Bahnson, A. H.
Barnhardt, E. C., Concord.
Beardsley, W. H., Charlotte.
Bigelow, W. H., Charlotte.
Black, J. W., Kinston.
Blair, R. H., Charlotte.
Blake, L. D., Belton.
Bowe, R. F.
Bradley, W. E., Charlotte.
Broadhurst, F. K., Smithfield.
Bryant, C. B., Charlotte.
Butler, J. M., St. Pauls.
Cannon, J. W., Concord.
Carpenter, J. S. P., Cherryville.
Chace, B. C., Jr.
Clark, Charlotte.
Coker, C. W.
Cone, Caesar, Greensboro.
Connell, J. S., Greensboro.
Cooper, D. Y., Henderson.
Constable, Charlotte.
Cottrell, B. S., Charlotte.
Cramer, Stuart W., Charlotte.
Davis, K. J., Goldsboro.
Dorsey, V. M., Silver City.
Dowd, W. C., Charlotte.
Draper, A. J., Charlotte.
Dunn, C. M., Gastavia.
Dunn, F. C., Kingston.
Emmerson, C. L., Charlotte.
Erwin, J. L.
Erwin, W. A., West Durham.
Falls, Dr. O. G., Kings Mountain.
Fisher, G. T., St. Pauls.
Fox, John W., Charlotte.
Gossett, B. B.
Gregson, John, Draper.
Hanes, P. H., Winston-Salem.
Harris, Wade H., Charlotte.
Haywood, T. Hold, Hau River.
Hazlewood, W. P., Charlotte.
Hause, J. M., Spray.
Hill, C. G., Thomasville.
Holt, L. S., Jr.
Howard, Edwin, Charlotte.
Howard, Mrs. Edwin, Charlotte.
Hunt, C. A., Jr., Lexington.
Hutchinson, C. E., Mount Holly.
Jenkins, N. L., Asheville.
Jennings, E. O., Gastavia.
Jennings, E. A., Gastavia.
Jennings, J. T., Atlanta.
Jones, D. H., Fayetteville.
Klinch, J. C., Charlotte.
Lee, W., Charlotte.
Lee, W. S., Jr.
Lewis, R. H., Oxford.
Lillard, T. J., Thomasville.
Lilly, H. W., Fayetteville.
Locke, E. J.
London, W. L., Pittsboro.
Long, J. A., Roxboro.
Lowe, I. C., Holly.
Macon, H. T., Warrenton.
Manley, J. P., Charlotte.
Mayes, J. H., Charlotte.
McEacher, A. R., St. Pauls.
McMurray, C. W., Shelby.
McDaniel, Mrs. H. F.
Miller, T. D., Statesville.
Mills, N. B., Statesville.
Morgan, G. Dan, Denton.
Nicholson, W. L., Charlotte.
Patterson, Jno. L., Roanoke Rapids.
Peck, T. D.
Pegvain, Thos. R., Charlotte.
Rankin, Wm. M., Oak Mills
Reid, E. S., Charlotte.
Reinhardt, R. J., Jr., Lincolnton.
Roberts, Rosco, Mayodan.
Rudisill, Mr. and Mrs. C. A., Lincolnton.
Rudisill, Mr. and Mrs. D. A., Cherryville.
Rudisill, M. E., Haury River.
Senark, Joseph, Gastonia.
Tanner, S. B., Henrietta.
Tate, R. L., Charlotte.
Thomas, R. D., Charlotte.
Thompson, W. P.
Thompson, W. H., Charlotte.
Thomason, L. W., Charlotte.
Walker, R. J., Charlotte.
Washburn, A. H., Charlotte
Webb, J. H., Hillsboro.
Welborn, G. H.
Wilkins, D. D., Shelby.
William, L. B., Charlotte.
Winget, A. K., Gastavia.
White, John C., Lenair.
Woodside, E. F.
Woody, Thos. N., High Falls.
Wray, R. T., Charlotte.
Wright, T. A., Lenair.
Wray, Mrs. T. Rush, Charlotte.

OHIO

Kusey, Chas. J., Columbus.
Orow, B. W., Cleveland.

PENNSYLVANIA

Bailey, Chas. W., Philadelphia.
Bailey, H. P., Philadelphia.
Bowen, Henry, Philadelphia.
Blythe, T. A., Philadelphia.
Butterworth, H. W., Philadelphia.
Clash, C. H., Philadelphia.
Cocker, G. B., Philadelphia.
Detwilder, H. A., Philadelphia.
Fisher, C. W., Philadelphia.
Freeman, Arthur C., Philadelphia.
Gerry, Roland, Pittsburg.
Gilkey, Pyam, Philadelphia.
Glynn, Martin P., Philadelphia.
Hoffman, G. F., Philadelphia.
Hungerford, C., Philadelphia.
Hyde, E. S., Philadelphia.
Kershaw, Nelson, Philadelphia.
Kohler, R. O., Catasaugus.
Larzelere, Nicholas H., Norristown.
Mitchell, C. S., Philadelphia.
Muller, L. P., Philadelphia.
Schell, Mr., Philadelphia.
Sharples, W. M., Philadephia.
Smith, R. P., Philadelphia.
Steel, Phil S., Philadelphia.
Stokes, D. Franklin, Philadelphia.
Taylor, Henry W., Jr., Philadelphia.
Wilson, Geo. H., Philadelphia.

RHODE ISLAND.

Armstrong, William H., Pawtucket.
Barrett, J. E., Providence.
Bowen, A. M., Providence.
Campbell, Leon W. and Mrs. Campbell, Woonsocket.
Dexter, Henry, Pawtucket.
Eddy, J. P., Providence.
Fich, Wynn, Providence.
Hariss, Wm. H., Pawtucket.
Haulsley, Geo. C., Providence.
Howe, F. W., Providence.
Howe, J. C., Providence.
Jackson, W. C., Woonsocket.
Kendrick, John E., Providence.
Larash, Geo. D., Providence.
Makepeace, Alex, Providence.
Martin, Fred, Central Falls.
Ordey, Matthew, Jr., Providence.
Palmer, J. S., Providence.
Rice, H. W., Providence.
Richardson, E. R., Pawtucket.
Rusden, E. A., Providence.
Street, John F., Providence.
West, A. S., Providence.

SOUTH CAROLINA

American Spinning Co., Greenville.
Arrington, Jno. W., Greenville.
Brason, G. W., Greenville.

Cardwell, D. D., Columbia.
Cassey, Ralph, Williamston.
Causey, Chas. W., Greenville.
Causey, Mrs. C. W., Anderson.
Clark, David, Charlott.
Coker, David R., Hartsville.
Gassaway, W. L., Central.
Godwin, C. W., Spartanburg.
Gossett, J. P., Williamston.
Guion, V. Q., Greenville.
Hammett, Jas. D., Anderson.
Hammond, A. H., Greenville.
Johnston, D. C., Rock Hill.
Law, Jno. A., Spartanburg.
Long, Alex., Rock Hill.
Low, Mrs. John A., Spartansburg.
Maxwell, J. H., Greenville.
Moore, W. B., Yorkville.
Moore, W. W., Rock Hill.
Murray, K. Foster, Charleston.
Parker, Lewis W., Greenville.
Partridge, E. R., Rock Hill.
Poe, F. W., Jr., Greenville.
Smyth, Ellison A., Greenville.
Smyth, J. A., Laurens.
Springs, Leroy, Lancaster.
Webb, C. S., Greenville.
Zimmerman, B. F., Edgefield.

TENNESSEE

Maynard, James, Knoxville.
Tyson, L. D., Knoxville.

VIRGINIA

Branch, M. C., Richmond.
Brauley, Miss Elizabeth, Roanoke.
Byars, J. Cloyd, Norfolk.
Carey, Mr. and Mrs. S. B., Roanoke.
Cary, S. B., Roanoke.
Gilbert, R. K., Richmond.
King, Edward S., Norfolk.
Mitchell, J. J., Jr., Fries.
Mitchell, J. Y., Norfolk.
Nalting, G. A., Jr., Richmond.
Read, Miss Notie, Roanoke.
Richards, Elias, Lynchburg.
Roberts, G. F., Fries.
Semson, C., Jr., Norfolk.
Selden, Mrs. A. F., Jr., Richmond.
Sloan, William, Berkly.

DISTRICT OF COLUMBIA

Bryant, H. E. C., Washington.
Heaton, F. G., Washington.
Earll, D. E., Washington.
Jones, Geo. W., Washington.
Mansfield, W. W., Washington.
Marshall, F. S., Washington.
Nunt, J. W., Washington.
Silk, Geo. W., Jr., Washington.
Shipe, Frank H., Washington.
Ricketts, M. C., Washington.
Wheatley, Wm. J., Washington.

EGYPT

Reinhardt, Alfred, Alexandria.

The Association was fortunate in having fine Washington spring weather for its convention days. The attendance was unusually large and of a representative character. The facilities of the New Willard were adequate for the business and social features of the meeting. The sessions were held in the ball room at the top of the hotel, away from the noise of the office and corridors, which were thronged from morning until night with members and guests.

Those in attendance were provided with a very attractive badge on which was an appropriate representation of a spinning wheel. The badge was attached to a watch chain, the whole making a very attractive ornament.

On Tuesday evening President Erwin entertained the Board of Governors and officers with invited guests at dinner in the red room of the hotel.

The two principal speakers were Secretary of the Navy Daniels and Senator Overman. The latter defended the conditions in Southern cotton mills and condemned the report of Secretary Neil of the Department of Labor, which he said presented conditions very different from the real facts. President Greene of the National Association of Cotton Manufacturers, C. J. H. Woodbury, secretary of the National Association of Cotton Manufacturers, Stuart W. Cramer, Lewis W. Parker and George W. Neville, president of the New York Cotton Exchange, were called upon by President Erwin, who himself made a pleasing address.

On Wednesday evening a large number of members attended a theatre party at the Gaiety Theatre, where a special performance had been arranged.

The afternoons were pleasantly spent in sight seeing or in visits to the Capitol where many members of both houses of Congress were enlightened by their constituents on the iniquities of the proposed cotton tariff schedules. The social features of these conventions are always prominent, and in spite of the gloomy forebodings of bad times to come in the event of the new tariff proving as disastrous as prophecied, there was no lack of good cheer among old friends and new acquaintances.

A pleasant party of thirty-five from New England came together in a special car from New York to Washington on Monday, reaching the Convention headquarters in the evening.

A useful souvenir was presented by the U. S. Gutta Percha Paint Co. of Providence in the form of a Mark Cross Safety razor.

The J. B. Ford Co. of Wyandotte, Mich., presented paper knives and letter openers as souvenirs.

THE NATIONAL ASSOCIATION OF HOSIERY AND UNDERWEAR MANUFACTURERS

The meeting and exhibition of this organization, which is to be held in the First Regiment Armory, Philadelphia, on May 6 to 9 promises to be of unusual interest. The space in the exhibition has been entirely taken by prospective exhibitors, assuring the success of this feature of the occasion. In addition the following program has been arranged for the meeting:

Opening session, May 6th at 10 a. m., Address by President Charles E. Leippe; Welcome by the Mayor of Philadelphia; Annual reports by the president, secretary.

committees and sub-associations; Address on "The Quid Pro Quo of the Hosiery Industry," by Charles Vezin, of Hinchman, Vezin & Co.; Address by Elbert Hubbard; Address by Fred W. Simons on "Arbitration"; Address on "Good Business from an Attorney's Standpoint," by Morris Wolf, of Stein & Wolf, Philadelphia; Impromptu discussion, communications, miscellaneous business.

Afternoon session, May 6th. Executive session of the seamless and full fashion hosiery manufacturers. Meeting at 2.30 p. m. of the various hosiery sub-associations, as arranged and announced at previous session. A special meeting of the underwear members is to be held at 2.30 p. m. at the Convention hall. Manufacturers not members may attend this session upon application to the Secretary-Treasurer.

Morning session, Wednesday, May 7. Only knitting manufacturers, associate members and knit goods buyers are invited. Address on "Advertising" by Frank Finney, of Street & Finney, New York; Open discussion; Address by representative of Knit Goods Buyers' Association; Response by P. C. Withers, Illinois Knitting Co.; Report of Cost Committee: New business, resolutions, question box, election of officers, appointment of committees, selection of dates for meeting.

Afternoon session, Wednesday, May 7. Special meeting of the underwear members at 2.30 p. m. In addition to the discussion of topics a question box will be introduced, into which inquiries and questions may be dropped by any one present. The box will be opened from time to time and the contents read by the Secretary-Treasurer. The manufacturers of woolen hosiery, gloves, mittens, sweaters and fancy goods will be provided with rooms in which they may meet to discuss questions directly affecting their interests.

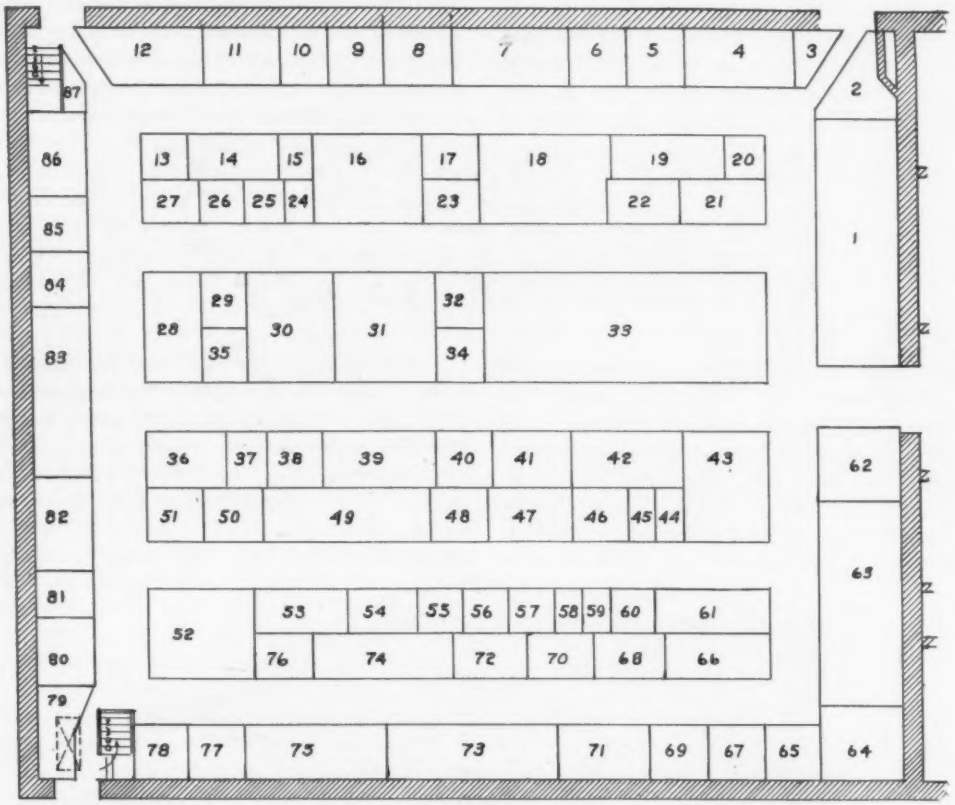
Wednesday evening, May 7th. Banquet and smoker.

Morning session, Thursday, May 8. For the knitting manufacturers, members and non-members; Addresses on "Conditioning and the Accurate Testing of Yarns and Fabrics," by D. E. Douty; "Practical Methods for the Manufacture of Silk Knitted Goods," "Scientific Management," by Frederick W. Taylor. An open discussion on the following topics: Net weight yarns, credit bureau department, collection department, cancellations, question box.

The list of those who have already arranged for space at the exhibition is as follows:

Aberfoyle Manufacturing Co., Chester, Pa.	18
Acme Knitting Machine & Needle Company, Franklin, N. H.	28
Acme Staple Company, Camden, N. J.	44
American Laundry Machinery Co., Rochester, N. Y.	16
American Wool and Cotton Reporter, Boston, Mass.	79
A. N. Ames Knitting Machine Co., Franklin, N. H.	23
Andreykovic & Dunk, Philadelphia	56
Barber-Colman Company, Rockford, Ill.	57
Beattie Manufacturing Co., Cohoes, N. Y.	27
Charles Beck Company, Ltd., Philadelphia	14
Beckert Needle & Supply Co., Philadelphia	66
Berlin Aniline Works, New York City	72
Richard A. Blythe, Inc., Philadelphia	34
Charles Bond Company, Philadelphia	9
Bell Telephone Co., Philadelphia	E
H. Brinton Company, Philadelphia	36
W. D. Butz, Philadelphia	54
Cassella Color Co., Philadelphia	50
Continental Latch Needle Company, New York City	25
Cotton Publishing Co., Atlanta, Ga.	26
Albert Ivins Croll, Philadelphia	6
George C. Decker, Philadelphia	58
Eastman Machine Company, Buffalo, N. Y.	32
Enterprise Mill Soap Works, Philadelphia	69
J. A. Firsching, Utica, N. Y.	30
J. B. Ford Company, Wyandotte, Mich.	11
Franklin Process Company, Providence, R. I.	77
General Electric Co., Schenectady, N. Y.	51, 78
Grosser Knitting Machine Company, New York City	33
Charles Hammer, New York City	2
Hanscom's Restaurant, Philadelphia	C
C. E. Hardenbrook Company, Philadelphia	45
Harding & Fancourt, Inc., Philadelphia	21
Hemphill Manufacturing Company, Pawtucket, R. I.	49
John W. Hepworth & Co., Philadelphia	22
Hess-Bright Manufacturing Co., Philadelphia	73
H. F. Hofer & Co., Paterson, N. J.	53
Jenckes Knitting Machine Company, Pawtucket, R. I.	42
Kaumagraph Company, New York City	80
Klauder-Weldon Dyeing Machine Co., Amsterdam, N. Y.	7
Knit Goods, New York City	10
W. T. Lane & Bro., Poughkeepsie, N. Y.	86
Latham Machinery Co., New York City	17
Lehigh Valley Silk Mills, South Bethlehem, Pa.	34
Link Belt Co., Nicetown, Philadelphia	29
McConnel & Co., Ltd., Manchester, England	40
Merrow Machine Company, Hartford, Conn.	41
Metropolitan Sewing Machine Company, Nyack, N. Y.	31

Meyers Bros., New York City ..... F
National Association of Hosiery & Underwear Manufacturers, Philadelphia ..... G
New England Cotton Yarn Co., New Bedford, Mass. 8
New York Revolving Portable Elevator Company, Jersey City, N. J. 81
Edwin A. Newton, Philadelphia 69
Nicetown Dye Works, Philadelphia 85
Nonotuck Silk Company, Philadelphia 13
Palm, Fechteler & Co., New York City 5
Mich 24
Schaum & Uhlinger, Inc., Philadelphia 82
Karl Schlatter Dye Works, Philadelphia 76
Scholler Bros. Co., Philadelphia 15
Scott & Williams, Inc., Boston, Mass. 33
J. L. Shoemaker & Co., Philadelphia 20
Smith, Drum & Co., Philadelphia 62
Southern Textile Machinery Co., Paducah, Ky. 38
E. O. Spindler, New York City 52
Standard Machine Co., Philadelphia 12
Alfred Suter, New York City 47



Paramount Metal Form Dyeing Co., Beaver Dam, Wis. 54
Paxton & O'Neil, Philadelphia 70
Peech Sons & Phillips Co., Camden, N. J. ... 68
Philadelphia Drying Machinery Co., Philadelphia 83
Philadelphia Textile Machinery Co., Philadelphia 1
T. J. Porter & Sons, Philadelphia 74
Posselt's Textile Journal, Philadelphia 55
Rhode Island Processing Company, Coventry, R. I. 48
Roessler & Hasslacher Chemical Co., New York City 84
The Rose Machine Company, Grand Rapids,
Textile American, Boston, Mass. 46
Textile Manufacturers' Journal, New York City 65
Textile World Record, Boston, Mass. 71
Tolhurst Machine Company, Troy, N. Y. 60
Union Special Machine Company, Philadelphia 39
Universal Winding Company, Boston, Mass... 75
Villa Stearns Company, New York City 4
U. S. Hoffman Co., Syracuse, N. Y. 63, 64
Geo. S. Weinerth Machine Co., Reading, Pa. 37
Thomas Wolstenholme Sons Co., Philadelphia 67
Wildman Manufacturing Company, Norristown, Pa. 43
Walter R. Zeigler, Riverside, N. J. 19
O. F. Zurn Company, Philadelphia 61

Correspondence and Notes

UPON TEXTILE TOPICS AT HOME AND ABROAD

THE MANUFACTURE OF ELASTIC FABRICS

BY SAMUEL BROWN

The weaving of elastic fabrics differs from every other kind of weaving and stands in a class alone. In dealing with rubber thread, we have to contend with an elastic element, which after being woven under high tension into a fabric, undergoes a process of contraction, and asserts itself in a variety of ways, often producing very surprising and unlooked for results. Goods apparently woven perfect at the reed are often so completely changed when they have passed through the press rolls to the slack condition, as to become worthless. This element of uncertainty proved for long years a source of discouragement to both weaver and manufacturer, and kept the business within very narrow limitations.

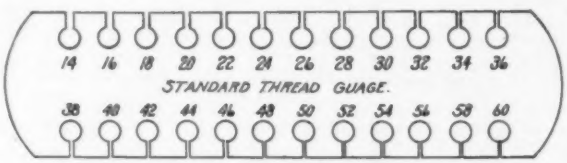


FIG. 1.

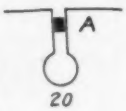


FIG. 2.

It was about the year 1850 that the business of elastic web weaving was first introduced in Leicester, England, in the manufacture of shoe goring, such as is used in what are known in America as Congress gaiters. For twenty-five years this style of shoe was very popular, and the goring business developed rapidly, until at one time there were about twenty thousand shuttles engaged in England alone in this particular branch of the elastic web industry. The business was very quickly established in France, Germany and Switzerland, and in a few years afterwards it was introduced in America, at Easthampton, Mass., which place has maintained its position as the recognized center of the elastic web industry in this country.

While shoe goring has to a very large extent passed out of popular use, on account of change in fashion, there are now a variety of other uses to which woven elastic fabrics are put, the more important of which are garters, suspenders, arm bands, belts and corset trimmings, in the manufacture of which there are now a total of approximately one hundred thousand shuttles employed in this country alone.

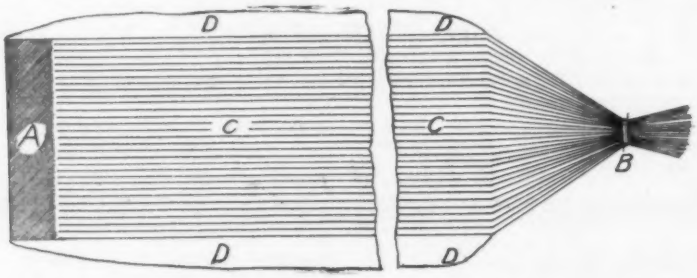


FIG. 3.

To treat the subject of elastic web weaving intelligently, and before taking up its various branches, it becomes necessary first of all to consider the rubber thread itself, the manufacture of which demands the most accurate adjusted conditions. While in most other articles into which the use of rubber enters, there may be employed a variety of

qualities of crude rubber, and there may also be adulteration in a greater or lesser degree; rubber thread demands the very highest quality of fine Para rubber, free from adulteration and absolutely pure.

This crude rubber, which is called gum, must first of all be kept stored for a considerable time to age, or "cure," as it is called, before it becomes fit for the manufacture into thread. The gum is thoroughly cleansed of every particle of dust and foreign substance which may have entered into it in the process of gathering and transporting the sap from the rubber tree; otherwise the finished thread will be faulty at any place where particles of dirt remain, and the thread would easily break when stretched to a high tension in weaving.

After going through various preliminary processes, the gum substance is passed through a series of heavy rollers or calenders, under very high pressure, and the "batch" is kneaded into a soft condition. This process prepares the gum for making into sheets, which is done in another set of calenders or rollers. These sheets are made about a yard wide, and sixty yards long, and are run through the rollers on the top of another sheet of very fine high grade cotton cloth, usually a twill, which must be as free from imperfections as possible, inasmuch as every irregularity on the cloth is reproduced, or printed on the soft gum, while going through the rolling process.

The rollers used for this purpose can be very accurately adjusted, so that the sheets of gum may be pressed to any desired thickness. As the sheets of gum and cotton cloth leave the calender, they are wound on rollers, in which form they are placed in large tanks for the process of vulcanizing. After being taken out of the vulcanizing tanks the sheets are hung up in warm rooms to dry, and then pass to the cutting machines, there to be cut up in strips or threads the full length of the sheets. Previous to this cutting process, the sheets of vulcanized rubber have been separated from the sheet of cotton cloth on which the soft gum was rolled.

The thickness of the sheet of rubber is first accurately determined by placing a multiple of thicknesses together to the depth of one inch, in this way finding out what proportion of an inch each sheet is in thickness. The thread is then cut to correspond in width to the thickness of the sheet, thus making a perfectly square thread. The number of widths or thicknesses of the thread in one inch is the size or number of the thread. For determining the size of the cut thread, a gauge similar to a wire gauge, Fig. 1, is used, into the slots of which the soft rubber is carefully placed, so that the flat sides of the thread will just fit in the slot,

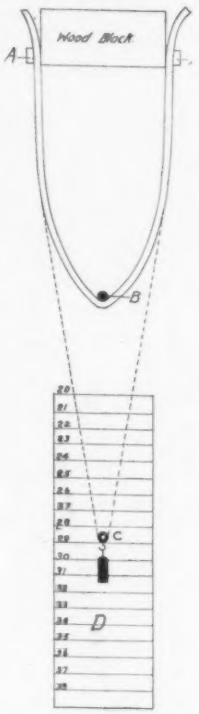


FIG. 4.

the thread not being subjected to the slightest tension. Fig. 2 is the No. 20 section of the gauge in which a rubber thread has been inserted.

No. 36 is used as a basis for computing the selling prices of all counts or numbers. The market price of thread quoted is always for 36s, and to each size finer than 36s is added 3 cents per pound, while to each size coarser than 36s is deducted 3 cents per pound from the quoted price. Until recently there was a fixed price for all rubber thread,

irrespective of size, although the factory cost was relatively much higher on the fine than the coarse counts. This price was regulated by the crude rubber market. The extremely high price of crude rubber, however, with the corresponding advance in thread which followed forced the manufacturers of webs to use finer thread. As a result goods were made with so little elasticity as to become worthless in a short time. For the general good of the entire industry, therefore, it has become expedient to penalize the use of the dangerously fine thread by a prohibitive price, and now sizes finer than 40s are advanced rapidly over and above the 3 cent grading.

The cutting of this soft springy sheet of rubber into thread is a very delicate operation. The sheet is first wound on a roller with a very light tension, each successive layer being held together by a solution of shellac, which keeps the laps from creeping. The knife used is circular. It is ground to a razor-like edge and runs at a high speed. While cutting, it is moved along the face of the roll of sheet rubber sideways, this sideway motion being automatically adjusted by a screw to a certain speed of travel, which spaces the cuts of each revolution and so designates the width or size of the thread.

In rolling the uncut sheet of rubber cloth on the roller preparatory to the cutting process, the sheet is arranged so as not to come in contact with the revolving cutting knife for the first two inches. This uncut part of the sheet is called the "head." After the circular cutting knife has travelled all the way across the roller on which the sheet of rubber is wound, so timed in its travel to cut the desired width clear down to the bottom of all the laps, but not cutting the "head" of the sheet, all the outside threads are gathered together and the entire sheet unrolled and separated from the shellac binding until the head is reached. Fig. 2 shows the head and tail sections of the cut sheet, A indicating the head; B, the tail end; C, the cut thread; and C, the side strip, which is waste.

The sheet of cut thread is then taken to the inspection room, where it is laid out at full length on a table. Here the irregular "side strips" are cut away, and all threads which are imperfect from irregular cutting, or other causes are also taken out of the sheet. The size or count of the thread and tension are then accurately determined. The tension test is made by taking a given length of a single thread from the sheet and fastening the ends by the two spring clamps at A, Fig. 4, so as to allow the thread to form a loop, of a fixed length, around the pin, B. A pulley, C, with a standard weight attached is then hung on the thread at the bottom of the loop. The elastic thread is drawn down by the weight as far as the rubber will stretch. The point at which the weight stops indicates the tension.

The size or count, and the tension of the thread are then marked on a ticket which accompanies the sheet. The sheet is looped up in a chain, and tied in a bundle. The bundle is placed in a zinc cylinder, into which is put a quantity of "talc" or soapstone. This cylinder is revolved until the entire bundle of rubber thread is well loaded with this lubricant. It is then ready for shipment to the manufacturers.

(To be continued.)

KAPOK

Although kapok possesses valuable properties, the material is comparatively little known in the upholstery trade. The following suggestions as to its worth and the principal uses it is being put to should therefore be of some interest. In Holland as well as in the south of Germany the value of the product of kapok trees has been long recognized. The material lends itself readily to disinfection, and is being converted to use for filling of all articles, such as mattresses, pillows, upholstered furniture, and other articles which serve for resting places for patients in hospitals, barracks, sanatorium, etc.

The use of kapok in other parts of Germany is not so general, although it is undoubtedly only a question of a short time when it will be used all over for upholstery.

The elasticity of each single fiber of a really good material, is so great that it is far

superior to sea grass, camel hair, horse hair, etc. Any upholstered article filled with kapok can be disinfected without injuring it in any way. Furthermore the material itself is a good protection against infectious diseases. How high this last property is to be valued is evidenced by the fact that army authorities are striving to equip all military hospitals with mattresses filled with kapok.

Prominent medical authorities have declared that in hospitals, barracks, etc., where infectious cases are treated, kapok should be used exclusively for mattresses, pillows, etc., on account of its being so easily disinfected.

It is claimed that kapok imported from German colonies is equal in quality to that produced in Java.—Die Textil Industrie.

A NEW SYSTEM OF SEAMLESS HOSIERY MACHINES

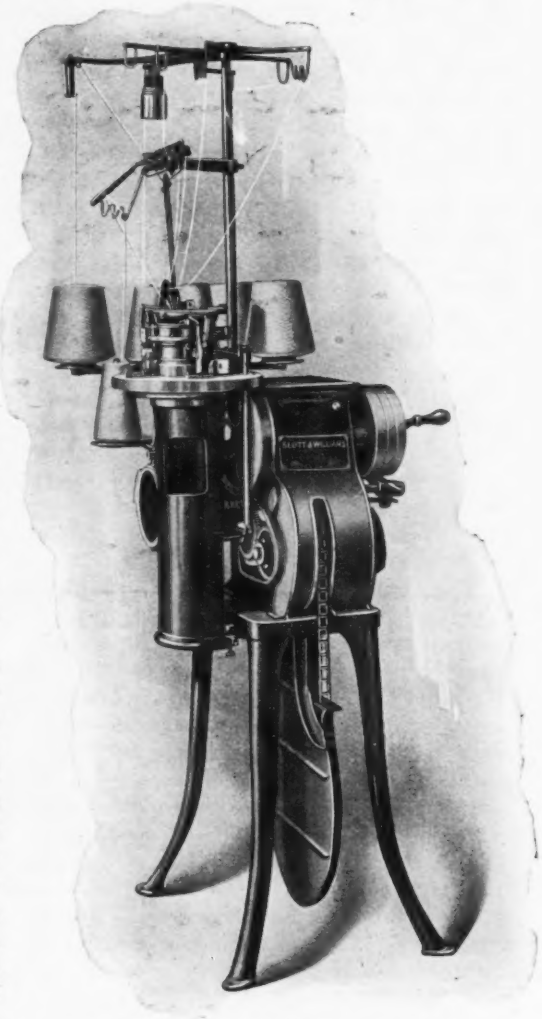
Scott & Williams, Inc., are just about placing on the market a new system of automatic seamless hosiery machines which embody some important and radical features of great interest.

These machines are of the revolving cylinder type, and are provided with yarn changing elements up to five in number, including the high splicing.

The machine has been developed and refined by Mr. Scott, the President of the Company, who heretofore has devoted most of his time to the development of underwear machines, but, realizing the importance of having a machine to offer to the trade of the most comprehensive character, he has gone to what appears to be the extreme of performance, perfection of operation and simplicity and direct functioning of all the parts.

In a recent interview with Mr. Reynolds, the treasurer of the company, he was asked for a statement of the important features of this new system and what was claimed for it, which follows:

"The foundation upon which the system is constructed," said he, "is fairly well illustrated in patent No. 653,652, July 10, 1900, which it is thought has claims which dominate many of the devices now employed in machines of this class. These latest products of this company, however, are widely different both in construction and scope of production, and it is believed, by well informed operators in the hosiery trade, that these machines will prove to be revolutionary and are destined to play a most important part in the future of the industry.



SCOTT & WILLIAMS NEW SEAMLESS HOSIERY MACHINE

"The machines are offered in several species or types, the lowest form being capable of making ladies' hose in string formation, or by simple changes, the ordinary half hose, by the customary hand transfer operation.

"An important feature of all the various species of this system is provision whereby

the knitted tube is slackened just where the reinforcing or splicing thread is introduced. This is done in a manner so positive that it is absolutely sure to occur on a given wale or needle at all times and it really marks a decided advance in the product because the top of the foot and ankle can be knitted much finer or stiffer than heretofore, for the simple reason that an independent adjustment, alternately and automatically stiffens and slackens in each course, depending altogether on the width of the reinforced portion. This makes it plain that one section of the tube is knit in a mesh or stitch of a size altogether independent of the other section of the tube, and all this makes for a more shapely and more durable stocking

"The machine for making hand transferred half hose, while having all the features of the machine just referred to, is also provided with means which automatically prepare the machine for the transfer operation without any vertical disturbance in the relation between the cam ring and needle cylinder, and the operator thereby saves three or four movements which naturally makes for increased production.

"The next species of machine," said Mr. Reynolds, "may be sub-divided into groups, one for making a woman's stocking and the other for making half hose, but, in this case they differ from those of the lower order in that they are capable of automatically turning a very desirable welt at the top of the stocking, and require no attention from the operator other than they be supplied with yarn, the stocking when finished being dropped from the machine into a box or other receptacle.

"In obedience to the modern requirements of the trade, which call for a machine capable of yarn changing at any point in the stocking as desired, Mr. Scott has invented and patented, under date of November 26th, 1912, No. 1,045,620 and 1,045,621, a stocking having an out-turned welt, the structure of which is fully set forth in one of these patents, and the other patent shows a tubular knitted fabric having a perfect selvage from the point where the stocking is first developed.

"A perusal of those patents will make clear the detail of the structures, and a few words here will, therefore, suffice to carry to the mind of those interested in the art the importance of this advance in the manufacture of hosiery and the extreme simplicity of the mechanism for its production.

"Bear in mind that a welt being turned outwardly while not differing materially in appearance from one turned inwardly has one very important operating difference, that is to say, that it does not call for mechanisms inside the circle of needles; therefore, the whole of this space is left free and open for the manipulation of the yarn changing devices.

"The welt is formed by simply holding up certain stitches of the initial course for so many courses as may be desired, upon needles being out of action. Simply restoring them to activity makes the integral union, and by proceeding with the ordinary knitting in the usual way the stocking is completed.

"I think it may be confidently asserted that from the time the first knitting machine was put in use the necessity of preventing the natural curl of a plain fabric was recognized, and from time immemorial, two plans have been in use to this end. First, by forming a hem in integral knitting or by sewing stitches, the second being to knit or otherwise secure to the top of the stocking a section of rib fabric, which, in view of its peculiar construction does not possess the fault of curling either inwardly or outwardly. If at any time in the history of the art," said Mr. Reynolds, "it has been possible to cheaply and effectively turn a welt, during the knitting process, upon the needles of a knitting machine, I think the necessity for applying a rib top as to the upper portion of a half hose would not have existed. This fact has, therefore, led Mr. Scott to adapt these machines for making half hose as well as hose, the dominant feature of the product being that the upper portion of the stocking is finished by an outward turned welt, and the system of machinery in question will produce numerous variants of both the ladies' hose and men's half hose, all of which result in articles of merchandise sure to be accept-

able to the selling trade as well as to the consumer.

"This system of machinery will require less skilled help, and inasmuch as the machines are automatic and drop the stockings therefrom, unskilled attendants can operate quite as many machines as they now do on ordinary string work.

"Another very important feature of this machine is the fact that without regard to quality of the yarn being used a stocking is started cleanly on the naked needles and a perfect selvage is formed, and this is just as true whether the yarn be silk or common ordinary carded yarn. Consequently, when the finished product is dropped from the machine a new one is started without any waste or damage to the needles.

"If a press-off should accidentally occur in the ordinary machine a considerable amount of waste may occur before the needles properly take up the yarn; with these new machines it is always possible to make a perfectly clean start-up without any waste.

"From the preceding statements it will, I think, be clear to your readers that many small economies outside of those which I have stated will ensue; where, for instance, a stocking with a sewed welt is desired, an operator will attend to more machines if the stockings are finished and dropped from the machine, than if she is obliged to sever them, and the time of cutting, and the necessary waste flowing from said cutting, is saved. Moreover, the terminal stitches of the product being pressed off from the needles are readily ravellable, and this aids the looper.

"The machines of the higher form also make a stocking which is unravellable when the texture is broken from either a garter tear or otherwise, and this consists of a row of anti-run back stitches introduced automatically where desired. These machines are made in all gauges.

"A group are on view at the Philadelphia show-rooms of the company, displaying the whole system at work producing the various articles above referred to, and they will also be shown at the company's space at the Knit Goods Exhibition in Philadelphia in May."

TENSILE STRENGTH TESTS OF FABRICS

By W. S. Lewis, Assistant Physicist,
National Bureau of Standards

From time to time the question arises as to the proper length at which to test fabrics and also the length that will give the greatest tensile strength. This investigation was undertaken in order to obtain some information upon these important questions and the following tables give in detail the kind of fabric employed with the very interesting results tabulated. In all cases the width of test strip was one inch, this being prepared by cutting slightly more than one inch, then pulling out yarns from either side of strip until one inch was reached. To obtain comparable results the threads were counted so that in every series of tests, the number were the same per inch of width.

The length of the specimen under test, that is, the distance between the jaws of the testing machine was: 1, 2, 4, 6, 7 and 8 inches, respectively, as shown in tables 1 and 2.

TABLE NO. 1—COTTON FABRICS

Tensile strength in pounds

(Width in all cases was one inch)

Between jaws	1 in.	2 in.	4 in.	6 in.	7 in.	8 in.
Cheese cloth	19.3	18.0	15.4	14.1	16.9	14.1
Dairy cloth	27.3	25.3	23.5	24.4	24.2	22.4
Gingham	35.0	33.0	34.1	31.2	32.8	33.0
Sheetings	35.4	34.3	32.1	33.0	33.7	33.9
Gingham	45.1	46.0	42.9	38.9	40.0	38.3
Gingham	45.1	42.5	37.8	38.5	38.7	39.2
Pillow cases	48.4	45.8	44.9	45.1	45.1	41.4
Gingham	54.8	55.7	53.1	53.1	48.6	49.7
Flannel	55.9	62.3	58.1	49.7	52.8	52.2
Sheetings	56.8	58.8	52.6	53.7	53.0	55.9
Sheetings	57.7	55.2	50.0	51.9	50.6	50.6
Sheetings	60.5	52.2	53.0	53.3	53.3	51.5
Sheetings	60.5	59.8	54.3	59.1	57.6	59.1
Huck Toweling	61.1	57.8	59.4	58.5	60.0	60.9
Sheetings	64.9	51.1	50.4	51.1	61.6	51.5
Sheetings	64.2	55.8	52.3	64.9	62.7	60.9
Flannel	66.0	58.7	51.4	55.6	58.3	58.9
Flannel	66.0	64.2	62.4	61.6	61.8	64.2
Sheetings	69.1	63.8	70.4	58.3	60.7	63.8
Flannel	80.1	73.0	79.2	77.6	75.9	74.6
Ticking	85.1	77.6	71.9	68.8	77.4	77.7
Ticking	106.0	107.6	94.8	97.9	99.6	92.2
Average	57.4	54.4	52.0	51.8	52.9	52.1

The results show that the maximum tensile strength is produced at 1 inch; the minimum, at 4 inches. The minimum point was not determined more closely in this series of tests.

As in the case of cotton, the 1-inch testing length of wool fabrics gives the maximum tensile strength, while the minimum appears to be at 6 inches.

The results for both cotton and wool fabrics are shown graphically by the accompanying chart.

The tensile strength of all fabrics is greater at a 1-inch testing length because more fibers are clamped at both ends. Theoretically any cotton fabric test-specimen of 4 inches or more in length and 1 inch in width will give the same breaking stress. Practically, however, the greater the length, the more numerous are the weak spots present between the jaws of the machine holding the specimen under test.

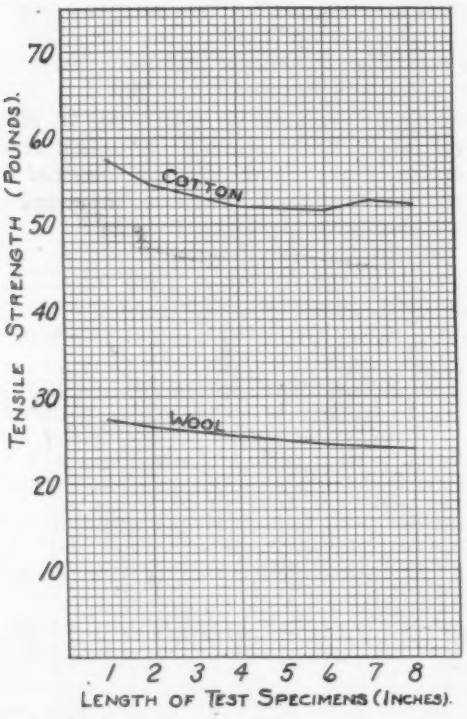


TABLE NO. 2—WOOL FABRICS

Tensile strength in pounds

(Width in all cases was one inch)

Between jaws	1 in.	2 in.	4 in.	6 in.	7 in.	8 in.
Flannel	16.9	17.8	17.8	14.9	14.9	14.9
Flannel	17.8	17.8	16.5	15.6	16.0	14.9
Flannel	18.5	17.6	16.9	16.9	15.8	15.8
Flannel	18.7	16.7	17.1	16.5	15.8	16.0
Flannel	23.7	25.3	21.8	20.9	21.1	21.3
Flannel	25.3	25.3	24.9	23.3	23.1	24.2
Middlesex Cloth	27.0	27.0	27.7	27.0	28.8	22.6
Flannel	28.2	28.4	27.3	26.4	25.7	26.8
Flannel	31.0	29.5	28.4	28.6	26.8	27.1
Bunting	31.9	29.9	30.5	30.1	28.6	28.6
Flannel	36.5	36.5	30.8	28.3	28.8	27.7
Kersey	37.8	36.0	32.7	34.5	31.0	32.1
Kersey	41.3	39.1	38.7	37.6	37.6	39.1
Average	27.2	26.6	25.4	24.6	24.1	23.9

For worsted or woolen fabric any test specimen whose length is 6 inches or more will have the same breaking stress. This is, of course, on the assumption that the material is practically uniform throughout its length and breadth as outlined in the previous paragraph.

The Bureau of Standards has adopted as a standard test specimen a strip 1 inch wide and having a length of 7 inches between the jaws of the testing machine. The 7-inch length was decided upon because it is approximately 180 millimeters, this being the length required when an elongation test is made, as the percentage elongation can then be read off directly on the machine employed in this determination.

ENGLISH NOTES

By Our Regular Correspondent

The heads of J. & P. Coats, Ltd., who rule the thread trade of the world, resent being called a trust and prefer to magnify the extent of the competition to which they are subject. Their business began in a small mill in Paisley in 1826 and so developed that in 1890 it could be sold to the public for $28,750,000, of which the Coats got some sixteen millions in hard cash. The concern at that date had average profits exceeding two millions and it owned the Conant Thread Co. of Pawtucket. In 1895 Coats bought out Kerr & Co. of Paisley and in the next year Clark & Co. of the same place, Chadwick's of Bolton and Brooks' of Meltham. Twenty millions was added to the capital, new ordinary stock was issued at 500 per cent. premium and aggregate profits of $4,600,000 were shown. In 1901 the capital was increased to $60,000,000 of which ten millions were debentures which have since been paid off. The net profits now exceed fifteen millions and the following dividends have been paid on 22 1/2 millions of common, after 20 per cent. has been paid on 15 millions of non-

cumulative preferred and 6 per cent. on 12 1/2 millions of cumulative preferred:

1897	20%
1898	30
1899	40
1900	50
1901-05	20
1906	25
1907	30
1908-12	35

Coats hold a million of common in the Fine Spinners' and Doublers' Association from which is derived a large part of its raw material, cotton yarn. Coats have a similar holding in the English Sewing Cotton Company, a concern of roughly $15,000,000 of capital. The English Sewing Co. holds half a million of preferred Coats and a majority of the shares in the American Cotton Company and on the profits of the last-named an income tax is exacted by English law. The Sewing Company did badly until its house was set in order by Otto Philippi, the chief magician of the Coats concern. Its affairs were so mismanaged—according to one director's charge—that the selling expenses of the Canadian branch worked out at 32 per cent. The dividends of the Sewing Company have been:

1898	..%
1899	8¾
1900	7½
1901	3¾
1902-05	..
1906-09	8
1910-12	10

The American Thread Co. in 1899 purchased 125,000 common in the Sewing Company at 75 premium and its dividend results as told in English records have been these:

1900-01	10%
1902	..
1903	4
1904	16
1905	8
1906	14
1907	..
1908	10
1909	4
1910	15
1911	10
1912	6

* * *

Calico print designs are fairly often registered by English owners and it is becoming increasingly common to register designs both for fabric and for paper, so that drawing rooms may be papered in the same colors and patterns as the upholstery. Curtain and lace designs are registered in considerable number also and more rarely manufacturers register a design for a carpet. In practice registration is confined to high fancies and the more elaborate or artistic designs, the costliest to produce. Such figures or combinations as can be worked out on dobby or plain looms are seldom protected and indeed few are worth protection. Complications arise not infrequently out of the practice of assigning exclusive rights in registered designs to particular persons for particular markets and lawyers' letters pass between the aggrieved and the offender. The cost of registering printed or woven textile designs is low in this country and patent attorneys undertake the work at $1.80 for a single design or $1.20 per design for a series of six and the fee covers a period of five years.

* * *

Various patentees have been essaying means of dividing plant fibers more finely than is done by the ordinary means of retting. One, operating a secret process, tried to sell a method of producing so called "artificial wool" from waste jute, but the system did not satisfactorily withstand searching examination. The reported discovery in Russia of a means of treating flax waste to produce fiber spinable upon cotton machines into cheap and level yarn has apparently not been patented in England. Cheveline, the inventor, has been said to employ alcohol to produce from waste and tow a fiber at about 10 cents a pound. This fact may well encourage a suspicion, seeing that alcohol is found too dear a reagent to use in making that very much more valuable material, artificial silk. The rights of another patent for producing fiber from flax and hemp are being offered for sale. Eusebio E. Garcia of Buenos Aires proceeds by freeing the stalks from leaves and seed, drying them and cutting them into short pieces. He feeds the product into a disintegrator fitted with revolving steel teeth which remove the outer bark and crush the resins to powder. The resultant is then put through a cleansing machine such as the Crighton cotton cleanser and is led to the cards or combs.

As the fruits of a six weeks' strike, unmarked by any scenes of violence or excitement, the Bradford Dyers' Association has won its liberty to reorganize working arrangements all round and pay its men by piecework. Its very large outlay on premises and plant had failed to reduce costs and not a manager in any of the numerous Yorkshire branch works had a doubt that a great deal more work could be done if the men would only lend themselves to its accomplishment. The changes in the manning of machines are expected to be considerable. In the case of cottons, singeing will doubtless cease to be a separate operation employing five men and be conducted at the mouth of the mercerizing range by the two men who have to be employed there in any case. The other changes will correspond with this one. No men, but only boys, are to be turned off as the result of the remanning and if in twelve months the men at any works are in favor of a return to day-wages their wish is to be respected. It is fairly certain that they will not wish to go back and perfectly certain that they will not in any event be able to reconstitute the old idling ways of working. The men are to be paid collectively, each gang receiving so much per hundred pieces, and it is provided that the rate shall not work out at less than 14 cents an hour and that the pace shall not impose an undue physical strain on the worker. Where piecework has been tried in dye houses it has commonly been found that the men who could never finish until six or seven at night previously could comfortably get away by four in the afternoon. As there is an extra 7 cents an hour for overtime, managers have now a considerable incentive to limit work to the day.

* * *

A Manchester audience laughed at a reminder of the old days when cotton carried two cents a pound profit for the spinner and $1.20 per piece for the weaving manufacturer. The business is still a good one in good years, but its profits are finer run and heed is taken of very small parts of a penny. Yet, as Mr. Copeland observes in his new book on cotton manufacture, English mills get along with very little bookkeeping and a very small office staff. He might have added also that their mails are small and their correspondence brief almost to the vanishing point. The bi-weekly meetings on 'Change and the telephone reduce the need for writing and it is surprising to see how large a mill can be efficiently worked with a counting-house staff of one. The book points out that a great many items needed in estimating costs are fixed absolutely and that the remainder are readily summarized. Standard costs are easily come at and they are checked by the prices at which one can get work done outside and by the financial results of the working of the last six or twelve months. For comparative purposes directors have statements drawn up weekly or monthly and these form a current guide as to the raw materials account and the commission spinning account. The great enemy of all English cost accounts is the factor of waste and its reduction is not so much an affair of accountancy as of management. Skilled accountants indeed have shown themselves powerless to save spinning mills suffering from the besetting evil of an undue production of waste. Lecturing to the Association of Managers of Textile Works, Mr. Hardman, of Bolton, showed that, in cotton mills, waste, visible and otherwise, varied from 15 to 30 and 40 per cent. according as the yarn was combed or carded, high grade or low grade. Anything that can without detriment be saved from the waste and added to the yarn is immensely important. An illustration can be taken from the spinning of silk in which a spinner found his normal production of spinning-waste to be twenty ounces per frame per diem. He had the frames fitted with stop-motions and cut the element of waste down to three ounces. For waste he receives 18 cents a pound and for yarn twelve times as much. As a net outcome he loses 19 cents per frame daily on receipts for waste and gains $2.30 on receipts for yarn. The disparity of prices is not as great in cotton and in wool, but a steady production of more waste than one's competitors make has the same effect in the long run.

The International Committee on Vegetable Fiber in Wool is still unable to report the discovery of the perfect wool pack at the perfect price. They commend the "Prolana" a bag with a paper lining costing 16 cents more than the Calcutta bag that has been the author of so many long bills for mending and burling pieces. With more trepidation they mention the "Lobonite" in which the paper lining is attached with pitch; this bag costs only 8 cents over hairy jute. The Committee have been impressed favorably by samples of paper twine and hope the more enterprising woolgrowers will make practical trial of it in shipments to Europe. Two of the three representatives of woolgrowers already on the Committee sign a minority report calling on manufacturers to pay part of the excess cost of the improved packs. In the beginning of the trade there were no such troubles, for Captain John Macarthur in bringing home his first consignment of Australian wool took the precaution of packing it in barrels. Hemp bags gave no cause for complaint, nor did jute ones until jute became dear and Calcutta fell into evil ways of manufacturing it.

* * *

Silk men in this country are at last seriously questioning the lawfulness of the appearance of the word silk in the compound name "artificial silk". Artificial the article certainly is, but silk it is not—any more than celluloid is marble. Its consumption is clearly increasing daily. The handsomest ties for men are all artificial this season, the smallware manufacturers seem to have abandoned natural silk altogether and the tapestry people use next to no tussah tram. Taffeta linings are dead, rich black goods can hardly be given away and the whole silk weaving trade is sliding headlong into the fancy cotton branch. The goods imported as "silks" from the Continent are artificial in very large part and altogether there has been nothing less than a revolution in the business in the last six years. In 1907 when Courtaulds were crape makers and users of natural silk their dividend had sunk to three per cent. Now that they are the principal makers of viscose silk yarn they pay fifty per cent. on the old capital and are giving their shareholders ten new shares in exchange for one old one.

* * *

The triumphant march of artificial silk has relegated the old question of the legitimacy of weighting natural silk to a back place. Yet as the matter has been raised in America one may reconstruct from English State documents a little story attesting the antiquity of the debated practice. A letter received by the authorities in 1630 advised them that some rich silk dyers in London used "slip of grindlestones and dust of iron and steel . . . so that 16 oz. they make 36 oz." There are two immediate sequels to the letter. John Trott, silkman of London was fined $15,000 by the Court of the Star Chamber for the false dyeing of silk, but was allowed to compound for $10,000. George Melvill in the next year received $7,500 for "discovering the abuse of false dyeing." Melvill, then, was the man who put the Crown on the track of the offenders, but subsequent developments do not prove him and his associates to have been virtuous characters. Actually it was alleged in 1636 that the silkmen who pretended to work a reformation in 1631, had since been the worst offenders. Two of them were John Milward, governor of the Company of Silkmen and John Aubrey, who with others were before the Star Chamber charged with combining to cause great quantities of silk to be corruptly dyed and sold. Attempts were made to bring the rogues to order and in 1637 the Company of Silkmen was protesting against a command that no silk should be dyed before the gums were boiled off and that no black should be used but Spanish black. Interferences are often troublesome to more parties than one and 1639 found dyers' customers complaining they were "compelled to pay 16 pence the pound for dyeing which was wont to be done, accordingly as they could agree, for 10 pence or 12 pence the pound at most." History repeats itself and a complaint of this kind might easily be made again.

A HAND BOOK OF WEAVES

By G. H. OELSNER, Director of the Weaving School at Werdau.

Translated and Revised by Samuel S. Dale

This Series began in July, 1911

2.—REARRANGEMENT OF BOTH WARP AND FILLING THREADS

Much more interesting are the crepe weaves produced by rearranging the threads in both warp and filling. This method enables one to obtain different crepe weaves by changing the position of the filling threads on the same chain without change of the drawing-in draft. The method of drafting these crepe weaves is shown at Fig. 1068.

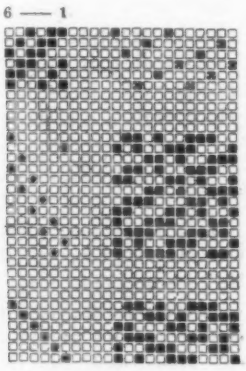


FIG. 1068.

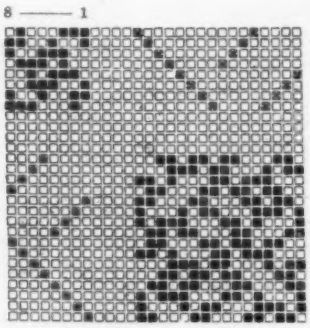


FIG. 1069.

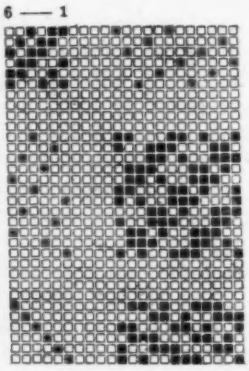


FIG. 1070.

The 6-leaf base weave is shown in the upper left hand corner. The 12-shaft drawing-in draft appears at the top of the figure. The 12-thread weave resulting from this draft is shown at the bottom. At the left in the lower left hand corner is the line of points indicating the 6 picks in the 12-thread weave at the bottom. Above this line and at the left side of the figure is given the order in which these 6 picks of the 12-thread weave are rearranged to produce the crepe pattern at the right. The rearrangement of the picks is indicated by the method used for drawing-in drafts.

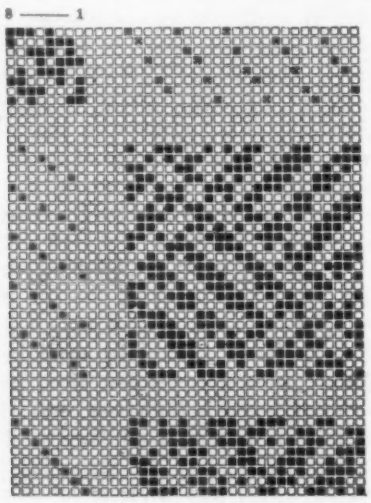


FIG. 1078

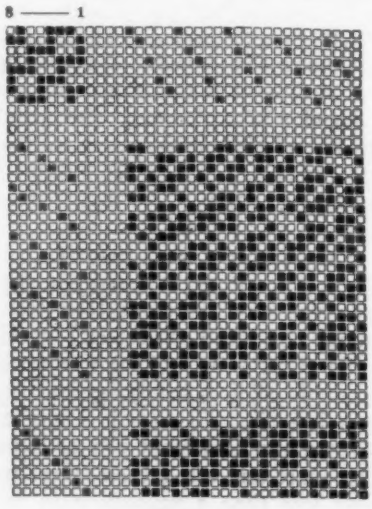


FIG. 1079.

This process of drafting is also illustrated

(Copyright, 1913, by Samuel S. Dale.)

in full in Figs. 1070, 1074, 1075, 1076 and 1078 to 1090. In each of the other drafts, Figs. 1071, 1072, 1073 and 1077, the weave obtained by rearranging the warp only is omitted. Wide diagonals can be produced in this way with a small number of shafts, as shown at Figs. 1082, 1085, 1086 and 1088.

Fig. 1068	6 shafts
Fig. 1069	8 shafts
Fig. 1070	6 shafts
Fig. 1071	8 shafts
Fig. 1072	8 shafts
Fig. 1073	8 shafts
Fig. 1074	6 shafts
Fig. 1075	8 shafts
Fig. 1076	8 shafts
Fig. 1077	8 shafts
Fig. 1078	8 shafts

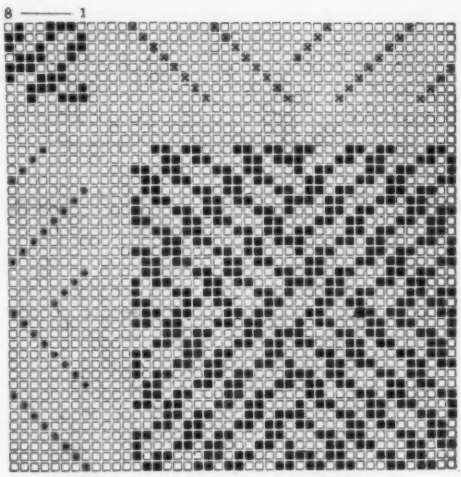


FIG. 1077.

FIG. 1071.

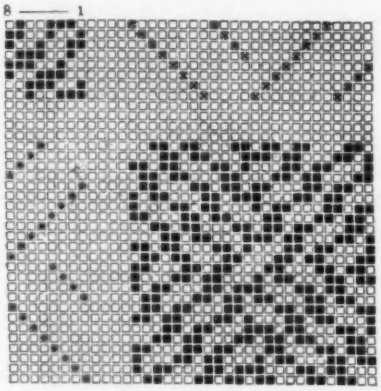
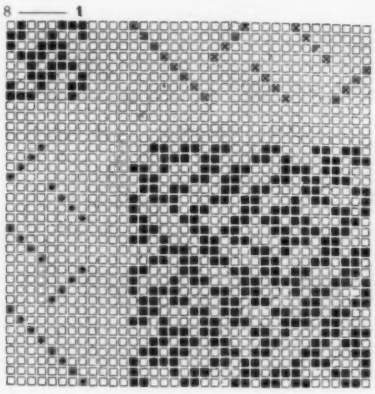


FIG. 1072.



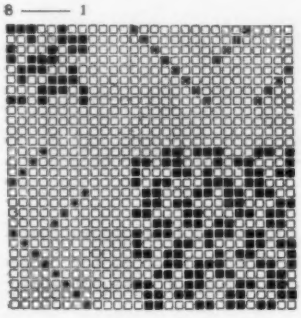


FIG 1073.

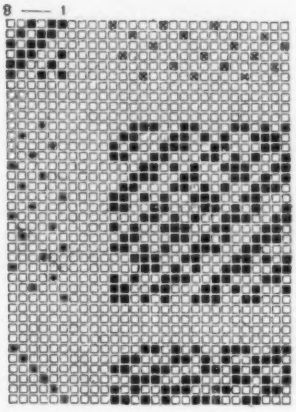


FIG. 1074.

Fig. 1079 ..... 8 shafts
Fig. 1080 ..... 8 shafts
Fig. 1081 ..... 10 shafts
Fig. 1082 ..... 10 shafts
Fig. 1083 ..... 10 shafts

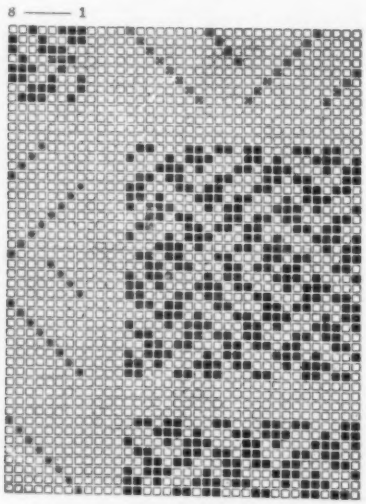


FIG. 1080.

Fig. 1084 ..... 10 shafts
Fig. 1085 ..... 10 shafts
Fig. 1086 ..... 10 shafts

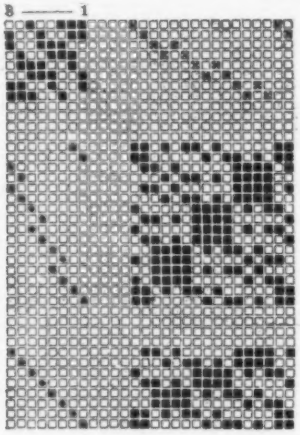


FIG. 1075.

Fig. 1087 ..... 10 shafts
Fig. 1088 ..... 10 shafts
Fig. 1089 ..... 10 shafts
Fig. 1090 ..... 16 shafts

CREPE WITH GROUPS OF THREADS ON THE SAME SHAFT

Another method of constructing crepe weaves consists in drawing-in a number of threads, each on a different shaft, as 1, 2, 3,

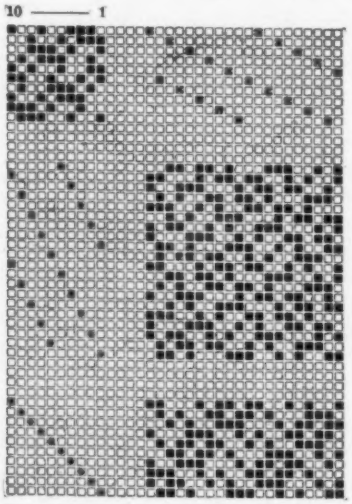


FIG. 1081.

4, and then drawing two or more threads on the same shaft. These groups should be so arranged that the number of shafts covered

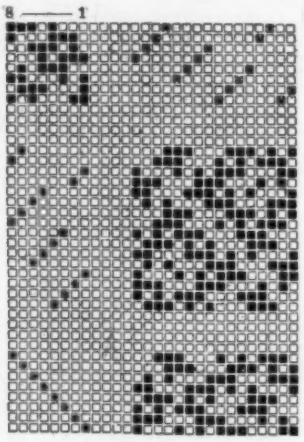


FIG 1076.

by each group shall be prime to the whole number of shafts, that is, the latter not divisible by the former. For example, with 8 or 10 shafts the threads may be drawn in 2

single 1 double, total 3 shafts, or 1 single 2 double, total 3 shafts. The object of this arrangement is to distribute the double

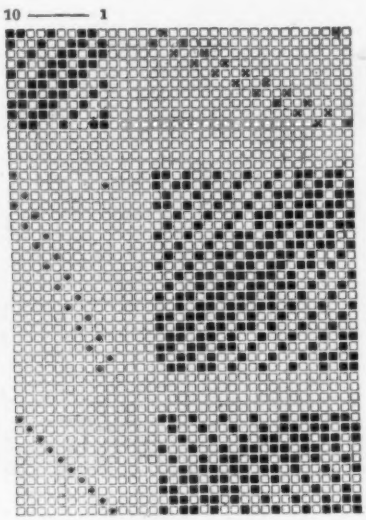


FIG. 1082.

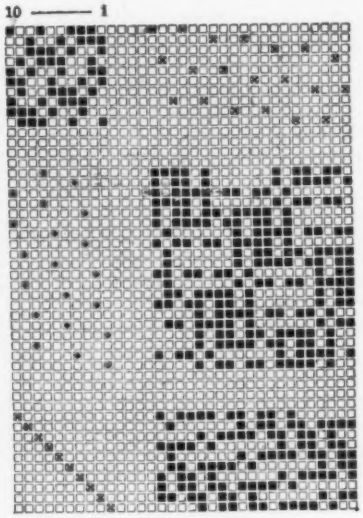


FIG. 1083.

threads uniformly on all the different shafts. As neither 10 nor 8 is divisible by 3 it follows that the double threads will come on a

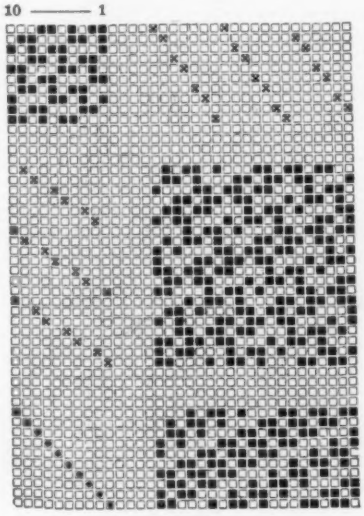


FIG. 1084.

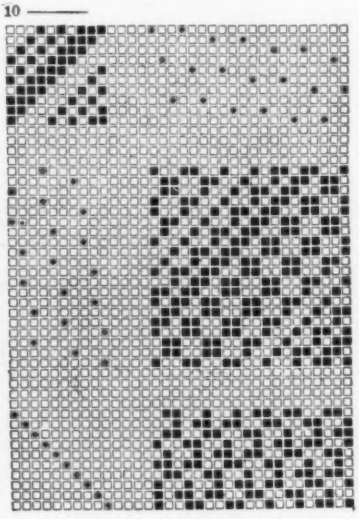


FIG. 1085.

different shaft at each passage of the drawing-in draft across the shafts, until every shaft carries a double thread, when the pattern is complete. The same rule is followed in the filling. This method is illustrated at Figs. 1091 to 1094, in each of which the weave pattern resulting from the rearrangement of the warp threads is shown at the bottom of the figure; from this the completed pattern, shown at the right of the figure is obtained by a similar rearrangement of the picks.

Fig. 1091 ..... 8 shafts
Fig. 1092 ..... 8 shafts

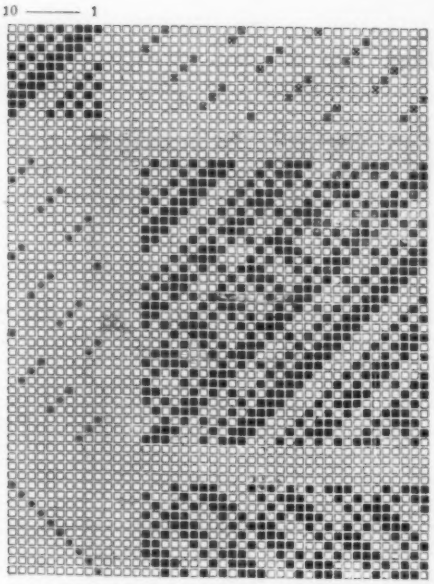


FIG. 1086.

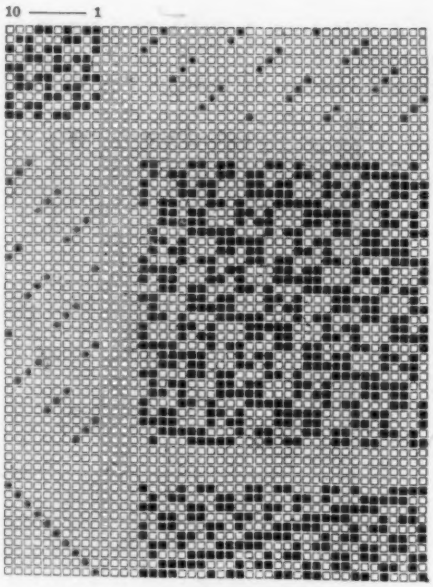


FIG. 1087

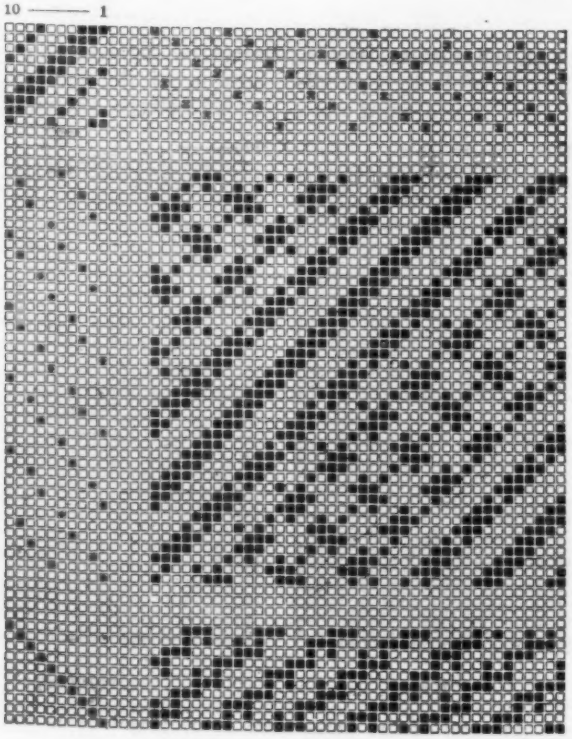


FIG. 1088

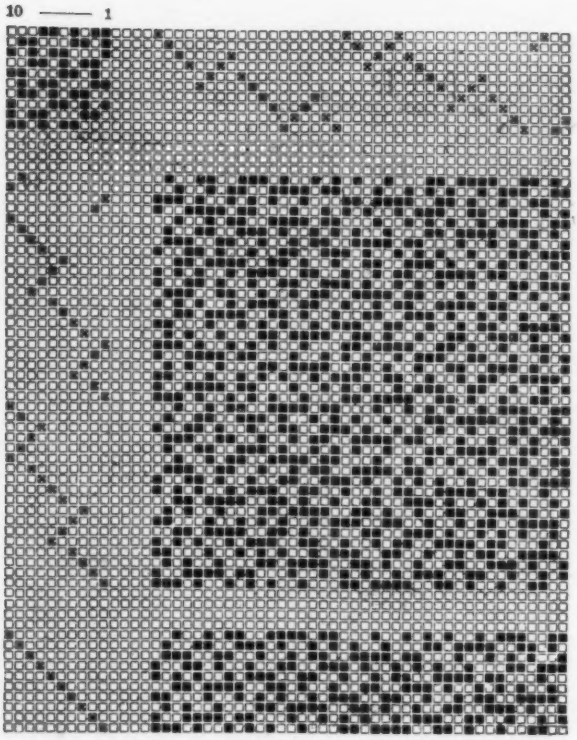


FIG. 1089.

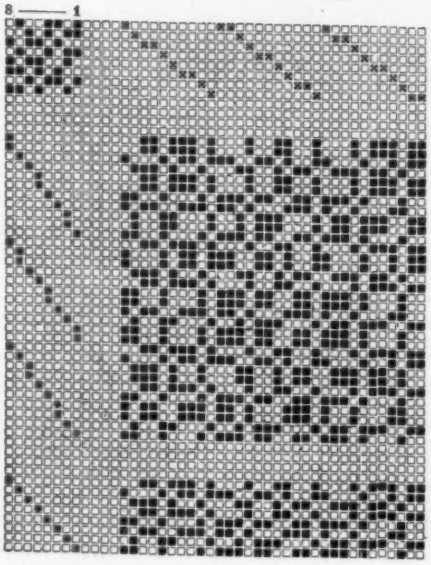


FIG 1091.

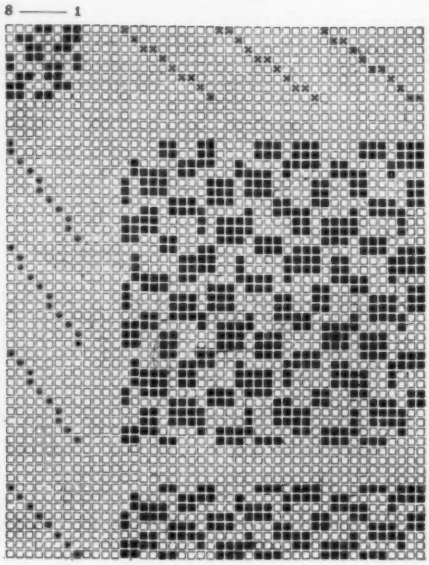


FIG. 1092.

Fig. 1093 ..... 10 shafts
Fig. 1094 ..... 8 shafts

more warp threads are left blank at fixed intervals, the ground weave being sketched

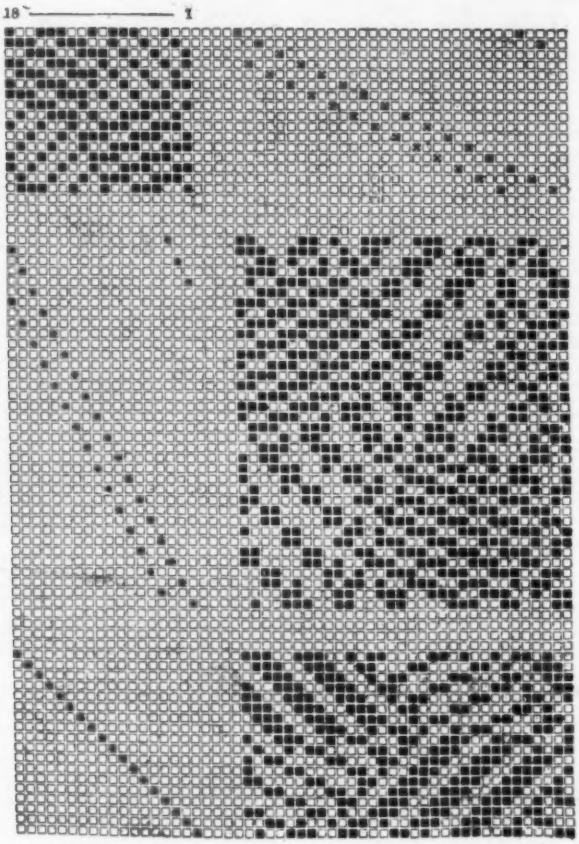


FIG. 1090

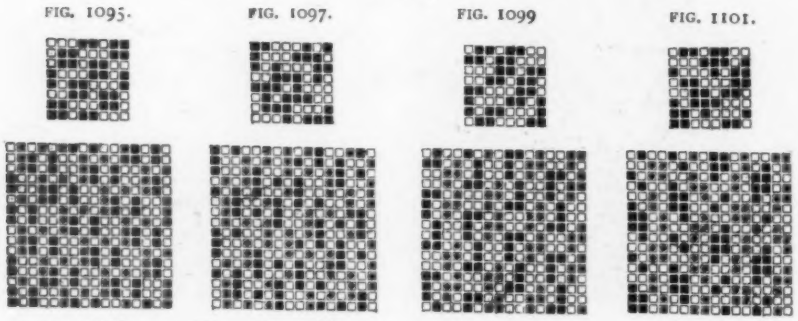


FIG. 1095. FIG. 1097. FIG. 1099 FIG. 1101.

FIG. 1096. FIG. 1098. FIG. 1100. FIG. 1002.

CREPE BY DOVETAILING A WEAVE WITH ITS REVERSE

This method consists in transferring the ground weave to a draft in which one or on the others. The blank threads are then filled in by inserting risers where sinkers are found at one side. If the blank threads are single each one is drafted to break with the

thread either to the right or left. In Figs. 1096 and 1098 the break is made with the thread at the left.

If the blank threads occur in pairs, the left hand thread of each pair breaks with the regular thread at the left and the right hand thread breaks with the regular thread at the right, Figs. 1100 and 1102. The ground weaves for Figs. 1100 and 1102 are shown at Figs. 1099 and 1101.

CREPE BY DOVETAILING TWO WEAVES TOGETHER

Crepe effects can be obtained by dovetailing two weaves together. Fig. 1105 is thus obtained from a twill, Fig. 1103, and a crepe, Fig. 1104. Fig. 1108 is derived from two crepe weaves, Figs. 1106 and 1107. Other examples will be found under the head of Dovetail Weaves.

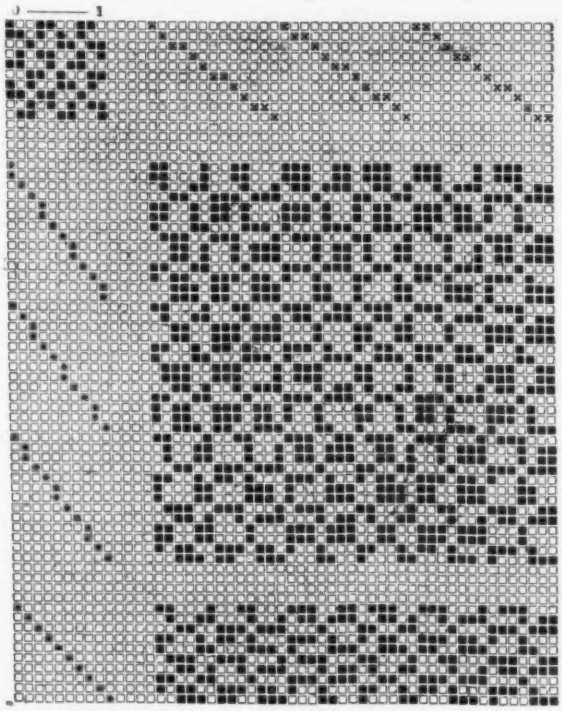


FIG. 1093

FIG. 1103. FIG. 1104.

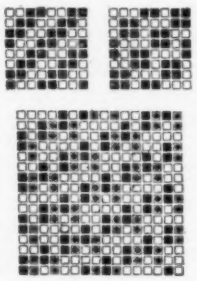


FIG. 1105.

FIG. 1106. FIG. 1107.

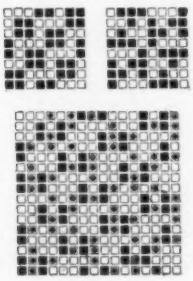


FIG. 1108.

Questions and Answers

Under this head we undertake to answer, free of charge, to the best of our ability, questions pertaining to textile matters received from any regular subscriber to the TEXTILE WORLD RECORD. Questions should be stated as briefly and concisely as possible. Inquiries pertaining to textile processes, machinery, improvements, methods of management, the markets, etc., are especially invited, as well as any legitimate discussion on the views expressed. All inquiries must be accompanied by the name of the person inquiring, not for publication, but as an evidence of good faith.

If the question is not of general interest to textile readers and involves expensive investigation, a charge covering the cost may be made, of which the inquirer will be advised before any expense is incurred.

DRAM AND DENIER

Editor Textile World Record:

I understand that 1 dram silk measures 256.000 yards to the pound, but would like to have you explain what is meant by the expression 14/16 when applied to silk. Dram (2108).

Silk is numbered by the dram and denier systems. The dram count indicates the weight in drams of 1,000 yards or the weight in pounds of 256.000 pounds. The denier count indicates the weight in deniers of 400 aunes, or the weight in drams of 17,352 yards, or the weight in pounds of 4,442,112 yards. The denier and aune are old French units of weight and measure. The English equivalents of the denier-aune system, as given by different authorities, vary slightly, but the variations are negligible in practice. The expression 14/16 as applied to silk means that the silk is not lighter than 14 denier nor heavier than 16 denier, the average being 15. A detailed explanation of the numbering of silk was given in our February, 1912, issue on page 104.

THE SPECIFIC GRAVITY OF COTTON

Editor Textile World Record:

I would like information in regard to the difference in the specific gravity of Sea Island and Egyptian cotton. Would the different proportions of the elements in the different cottons vary the specific gravity? Nelson (2105).

An answer to this question was published in our January issue and our French correspondent, to whom the inquiry was submitted, sends the following additional reply:

According to the "Chemiker-Kalender" the specific gravity of cellulose is 1.525; according to Cross and Bevan, 1.5; Watt's dictionary, 1.25 to 1.45. None of these authorities indicate the nature of the cotton examined nor the method of determining the density. The specific gravity can be determined by the aid of the Regnault apparatus.

Gaul.

CROSS DYEING OF COTTON AND ARTIFICIAL SILK

Editor Textile World Record:

Is there any method of dyeing to prevent direct blues and blacks from going on the artificial silk in a cotton and artificial silk mixture dyed at a temperature of 120° to 140° F.? Solon (2148).

It is not possible to dye mixtures of cotton and artificial silk, and at the same time prevent the color from going on the artificial silk. Cotton and artificial both have an affinity for the same colors. There is no method now known by which artificial silk may be made to resist colors that go onto cotton.

Beta-Naphthol.

FINISHING SHAKER SWEATERS

Editor Textile World Record:

Please advise me the best method of finishing shaker sweaters and the machines used.

Knitter (2102).

Shaker sweaters are usually made in parts, that is, the body, sleeves, pockets, cuffs and collars are made separately and can be finished either by hand or machine. The hand finish is the better one, but the most expensive. In finishing by machine a looper can be used to put the garment together and a buttonhole machine to make the button holes, and a button sewing machine to sew the buttons on. The first thing is to have the cuffs looped on to the sleeves, then the sleeves looped on to the body, then the hem looped up on the bottom of the coat, and the trimming and collar put on. When this is done, take the coat to the button-hole machines and make the button holes, then to the button sewing machines to sew on the buttons, when it is ready to press and box. This can all be done on a sewing machine, using either a diverse trimmer and a seam coverer, or a No. 15,400 seaming machine which gives a very good finish. To get a finer stitch on the Grosser machine, I would

advise setting the stitch tighter and not running the take-up any tighter than is necessary, just keeping the stitch clear of the needles. Most knitters use 3 needles to the inch instead of 2 1/2. Using three it would give a much finer fabric. Denbigh.

—÷—

SIZING FOR SILK FINISH THREAD

Editor Textile World Record:

Can you give us an exact composition or formula for making up the sizing which is used for what is generally known as silk finish thread, and from whom we can obtain the necessary materials?

Hawthorne (2123).

We have referred this inquiry to Danker & Marston, Boston, Mass., who have given us the following formulas and from whom the materials can be purchased:

Heavy Finishing

Water	gals.	15
Starch	lbs.	2¼
Gum Tragasol	lbs.	2¼
Soap	lbs.	2¼

Light Finishing

Water	gal.	1
Gum Tragasol	lbs.	2

Above are employed either in the wet doubling trough, or in the polishing machine.

Also

Gum Tragasol	parts	100
Shellac	parts	2
Ammonia		

Dissolve the shellac in water by means of the ammonia and then add this to the Gum Tragasol afterwards, diluting the mixture further if necessary.

Also

Water	parts	40
Gum Tragasol	parts	12
Carnauba Wax	parts	6
Castile Soap	parts	3

Polish yarn on glazing machine as usual.

—÷—

A LENO WEAVE

Editor Textile World Record:

Could you tell me how to make the cloth shown at Fig. 1? Eastman (2096).

I have given considerable thought to this question and have finally come to the conclusion that the four threads running down the open stripe are put in by hand after the cloth is woven. I can cross threads from right to left or left to right of other leno or crossing threads by the use of doups in front of the reed, but I cannot possibly conceive of a motion on the loom that will twist picks already woven four ahead back over four picks in the rear. That is how the cross is made in the cloth, for the rest of the open-work is straight leno and can only be made in the direction of the stripe. Again, the twill stripes could not be made so prominent and distinct if they were made by the filling; in fact none of the stripes could be made as distinct as they are if made other than warp stripes. This reasoning carries me back to my first statement, that I do not see how a motion on the loom can draw back four picks over four later picks, hence my belief that the cross is made after the cloth is woven.

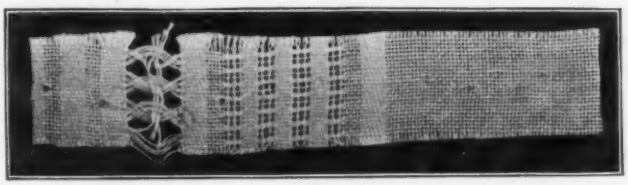


FIG. 1. A LENO FABRIC SHOWING ONLY PART OF THE DESIGN.

There are practically thirteen harness required to weave this cloth, including two sets of doups, 1, 2, 3, 4; two harness for plain, 5, 6; three for the twill, 7, 8, 9, Fig. 2; ground

or standard harness and cross thread harness for the first doup, 10, 11; and ground and crossing thread harness for the second doup, 12, 13. Two harness levers are required for the easers. It is possible to make this on a twelve harness dobby by using the same harness for ground threads for both doups. This reduces the harness to twelve, and attaching the straps for the easing rods to the second and fourth harness levers will take care of the easers. It is necessary when making this style of a leno, which is called lace leno, to have a motion to prevent the snarling of the doup when changing from the open pick to the crossing pick, using either a double yoke or a hook attached to the second and one to the fourth levers. The double yoke requires an extra harness lever; that is, the double yoke which is a double hook is attached to the two levers, and the chain is pegged to lift these harness levers alternately, so that the doup or loose half is dropping to the center as the doup standard is being raised. When a single hook is used it is forced on the doup standard lever so that it will come in contact with the doup lever, the peg being left out of the chain that operates the doup lever. That lever will be dropping as the doup standard lever is raising, and the hook on the last named lever will come in contact and draw up the doup. Chain 1 is for the single hook. Chain 2 is for the double yoke. The stripe, A, is where the extra is made in the filling after the cloth is woven. The doups are made right and left hand and not all one hand as is most common in this country.

Jean Paul.

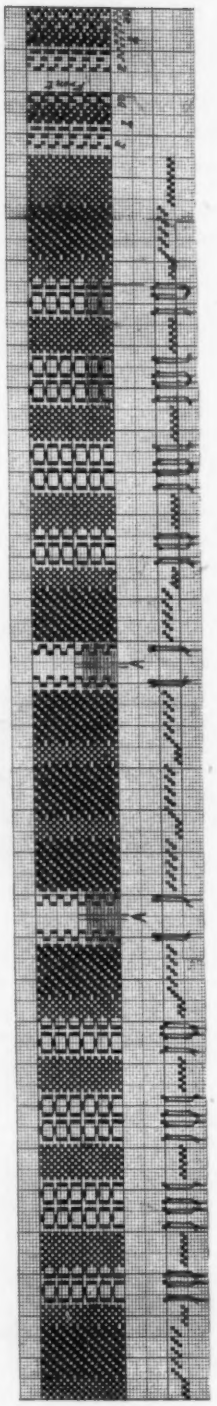


FIG. 2. WEAVE FOR A LENO FABRIC.

TESTING FOR STRENGTH

Editor Textile World Record:

I would like information regarding the testing of ticking as used on mattresses. At the present time when buying ticking the only test we have is to feel the thickness of the cloth, which we find is not satisfactory. We think that there is some other way of testing either by strength or by weight per yard. Kenwood (2158).

The strength of ticking or other textile fabrics can be accurately determined by the use of the strength testing machine. The weight per yard is readily calculated by weighing 1/300 of a square yard (4.32 square

inches) in grains. This area is obtained by cutting a sample measuring 2.4 inches by 1.8 inches. The number of grains in the weight of such a sample is equal to the number of ounces per yard, 52 1/2 inches wide. The yards per pound are readily found by multiplying the number of grains by the width of the goods and dividing 840 by the product. For example, a sample measuring 2.4 inches by 1.8 inches weighs 8 grains. Find the number of yards 40 inches wide to the pound.

40 (inches) $\times$ 8 (grains) = 320.
840 $\div$ 320 = 2 5/8 yards 40 inches wide to the pound.

The weight of this fabric is 8 ounces per yard, 52 1/2 inches wide. This method of calculating the weight and yards per pound is fully explained in "A Talk on Textile Arithmetic," published in our September, 1911, issue, a copy of which will be mailed to anyone interested on application.

DAMPENING SILK

Editor Textile World Record:

We would like to have a formula for a liquid for dampening silk during the winding process. We use Japan tram, bright black, weighted to 22 to 24 ozs., and dampen it by roller during the winding process. The solution we are using is composed of 1 lb. of olive oil soap, 1 pt. of olive oil, and 20 gallons of water. Our trouble is that, after the silk has stood for, say, 12 or 14 hours in the damp box after winding, a mould comes all over the silk, making the strands stick together on the bobbin. After drying the bobbin of silk the mould disappears. The reason for our dampening the silk is to soften it before knitting it up, so that the fabric will come clear and perfect; if the silk be not dampened, the fabric will be full of "pinholes." Hixon (2065).

The dampening, or soaking, of silk is for the purpose of softening the hard, gummy places in the skeins, which have been in contact with the arms of the reel on which it was wound. This process requires a bath in which soap and oil are used. The presence of this soap and oil on the silk fiber assists also in minimizing the troublesome effect of the static electricity developed in the silk by the high speeds at which American machinery is run.

In Europe, silk is wound bright, as it is called, and no dampening or soaking process is employed, but it entails more care and labor, and machinery is run slower there.

In this country there is no difficulty in running silk "bright" if the skeins are entirely free from hard, gummy places, but if these exist it is better to soak the silk. The harder the gum the greater the amount of soap and oil that must be used in the bath.

If raw silk is to be used for warp just as it is, without throwing, it is desirable to avoid soaking it, as the soluble gum, which surrounds the double filament that is spun by the worm, acts like a coating of varnish, and soaking has a tendency to loosen this coating and open up the fibers, and make trouble in the weaving. When lots with particularly hard gums must be soaked, it should be for the shortest possible time and with the water as cool as possible. For organzine and tram purposes it is customary to soak all silk.

A commission throwster not only has to add sufficient soap and oil to his bath to soften the gums and assist the working of the silk, but it is customary to add such further quantities as will make the weight of the silk returned to the customer heavier than it was in the raw, in spite of the fact that two or three per cent. of waste may have been made in throwing it. Low grades of soap and oil are often employed. With more and more manufacturers taking proper steps to check the waste made in throwing, by means of conditioning house tests, this practise is likely to become less common. For a manufacturer who is processing his silk for his own use, nothing but the highest grades of soap and oil should be used. In that case a smaller quantity will suffice, so that the expense may really be no greater, and the silk then will not give trouble in the dyeing. A very high class olive oil (of excellent quality for table use) may cost, if judiciously bought, $2.00 to $2.25 per gallon, and best white olive oil soap, well dried, should be procured for about 7 cents a pound. Such a soap should contain no more than about 15 per cent. of moisture.

A suitable bath may be prepared as follows: For each pound of silk to be soaked,

let in to the tub about 1 1/2 gallons of water, though the quantity of water may be varied if desirable. Shave up the olive oil soap finely and add to the bath one pound of this for each hundred pounds of silk. For the same amount, add also one pint (weighing about a pound) of olive oil, both of them making about 2 per cent. of the weight of the silk. After the soap is added turn steam into the bath, and boil and stir well till all the soap is thoroughly dissolved, then add the oil, and boil and stir that well also. Then run down the temperature to about 90° F. and enter the silk.

It is customary to put silk to soak in the evening and to remove it in the morning, the temperature of the bath generally falling somewhat during the night. Less time will do, but this plan is usually more convenient. During the soaking the great bulk of the soap and oil is taken up by the silk.

The usual way is to untie the bundles of silk, and put in the skeins, rolled up, just as they come, and when the full quantity is in, and the skeins float up to the surface, to keep them down by weights. A square lid of boards, that will just fit loosely inside the tub, can be covered with copper or canvas to prevent the silk from catching. This is placed on the top of the silk and weighted down to hold it under water.

With the skeins in the rolled up state, the absorption of soap and oil is not the same throughout, the outer part of the skeins getting more than the inside. Irregular results in dyeing may be then invited. To obviate this, careful throwsters sometimes open the skeins and then twist or fold them up again very loosely, entering them in that shape, but very careful handling is required in the opening and retwisting, the putting of them in the bath, and the removing of them, or they may be badly tangled and injured. After removal from the bath, the silk is wrung out, either between rubber squeeze rolls or in the hydro-extractor. If in the latter, it should be placed in bags or made into bundles, with the covering made of special open mesh cotton material.

The damp skeins are next opened up, and the gummy places opened and rubbed by experienced hands, and they are then placed on suitable racks and wheeled into the dry room. After drying, the silk still on the racks, is allowed to remain a day in a suitably moist place to regain its natural moisture and is then ready for the winders. If the silk is good, and the preceding method has been followed, it can be wound at high speed and at low labor cost.

Silk should not be wound damp. Not only may it become gummy and stick together on the bobbins, to say nothing of the moulding of which "Mulberry" complains, but, as it dries, it is constantly varying in tension and strength, as damp silk stretches more easily than dry silk. When the silk is doubled these will contract irregularly with a consequent danger of cockling in the goods and of corkscrew effects in the yarn.

The undue stretch put upon the silk is also at the expense of its elasticity, and, if considerable. it may adversely affect the working of the silk in the loom.

In conclusion it may be said that proper methods and handling in the soaking are of vital importance as a foundation for the processes that are to follow after.

Box Elder.

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SILK NOILS

Editor Textile World Record:

Please inform me whether 8 run yarn can be made from silk noils, like sample enclosed, on a woolen card composed of one creel and Apperley feed to a set, with a No. 30 wire on the first breaker, No. 32 on the second breaker, and No. 34 on the finisher. Carder (2118).

Six run yarn is the limit for this kind of noils. I have made yarn on a woolen card up to 10 run, but from a better quality of noils than sample sent. One difficulty in making such fine yarn is to get the roving fine enough, as there cannot be much draw on the mule. Therefore the fineness of the yarn will depend a great deal on what kind of a condenser is used. I worked for a firm in Europe that used a steel top condenser, Belgian system, as well as a single belt condenser, Saxony style, 200 ends on a 60 inch card, making a silk noil yarn up to 10 run.

Wheaton.

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Knit underwear was imported into the Union of South Africa to the value of $1,000,000 during the first four months of 1912, against $875,000 worth in the same period last year.

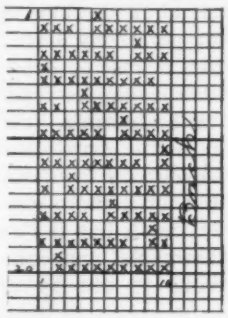
WEAVE FOR A CHINCHILLA FABRIC

Editor Textile World Record:

I am about to commence making a chinchilla fabric, 2 run warp, 1800 ends, 75 inches wide, 52 picks: 1 pick back, 2 runs; 1 pick face, 1 run. I would like to have a good weave for such a fabric. I enclose the weave I intenl to use, but if you know of a better one so as to make a good firm fabric I wish you would send it to me.

Weaver (2121).

We would advise using a different chain draft. The weave is too tight for goods of that class and we doubt if good results would be obtained from the draft enclosed. In order to make a good chinchilla an open



WEAVE FOR A CHINCHILLA FABRIC.

weave must be used. If a tight weave is used it requires more napping before going to the chinchilla machine. Care should be taken not to run the goods too long in the fulling mill as they need but very little felting. If felted too much it is impossible to get the desired effect on the chinchilla machine. Fig. 1 shows a weave for a chinchilla fabric.

Greenwich.

RECOVERED HORSEHAIR

Editor Textile World Record:

Can you inform us as to the English market for hair cloth, that is, people who would buy hair after the cotton threads have been removed from the cloth?

Pferde (2173).

There is a pretty strong market for horsehair in England and several dealers are advertising for supplies at the present time. One maker of haircloth is known to buy secondhand woven goods and to extract the cotton himself. Others may be doing the same. There are also dealers who carbonize haircloths. No doubt the reduced use of horses helps to explain the growing care that is taken of hair waste. Names of manufacturers and dealers to whom application might be made are sent herewith.

The longer the hair the better its value. It is still used largely for covering the seats of railway carriages and shorter lengths come in for weaving interlinings. The shortest hairs are curled for upholstery stuffings and it is quite likely that medium lengths can be used in such a process as the "Laptair." In the latter, lengths of horsehair form a core around which cotton threads are mechanically plaited to bind the whole together to make a continuous yarn. Recovered hair should be useful also to makers of hygienic flesh-rubbers.

Regent.

HYDROMETER EQUIVALENTS

Editor Textile World Record:

What is the equivalent of 40 B. by Twaddle scale?

Baume (2078).

The following table taken from Knecht, Rawson and Lowenthal's Manual of Dyeing, gives the equivalents of hydrometer degrees Be. by the Tw. hydrometer:

COMPARATIVE TABLE OF HYDROMETER DEGREES BAUME AND TWADDLE

B.	Tw.	B.	Tw.	B.	Tw.	B.	Tw.
1..	1.4	18..	28.4	35..	64.0	52..	112.6
2..	2.8	19..	30.4	36..	66.4	53..	116.0
3..	4.4	20..	32.4	37..	69.0	54..	119.4
4..	5.8	21..	34.2	38..	71.4	55..	123.0
5..	7.4	22..	36.0	39..	74.0	56..	127.0
6..	9.0	23..	38.0	40..	76.6	57..	130.4
7..	10.2	24..	40.0	41..	79.4	58..	134.4
8..	12.0	25..	42.0	42..	82.0	59..	138.2
9..	13.4	26..	44.0	43..	84.8	60..	142.0
10..	15.0	27..	46.2	44..	87.6	61..	146.4
11..	16.6	28..	48.2	45..	90.6	62..	150.6
12..	18.2	29..	50.4	46..	93.6	63..	155.0
13..	20.0	30..	52.6	47..	96.6	64..	159.0
14..	21.6	31..	54.8	48..	99.6	65..	164.0
15..	23.2	32..	57.0	49..	103.0	66..	168.4
16..	25.0	33..	59.4	50..	106.0	67..	173.9
17..	26.8	34..	61.6	51..	109.2	68..	..

The degrees Tw. are calculated from the specific gravity of a liquid heavier than water as follows: Subtract 1 from the specific gravity and multiply the remainder by 200. Example: Find the degrees Tw. of a liquid having a specific gravity of 1.4:

$1.4 - 1 = .4.$

$.4 \times 200 = 80°$ Tw.

To calculate the specific gravity from the degrees Tw.: Divide the degrees Tw. by 200

and add 1 to the quotient. Example: Find the specific gravity of a liquid standing at 40° Tw.:

$40 \div 200 = 2.$

$.2 + 1 = 1.2$ specific gravity.

UNEVEN LENGTHS IN LADIES' HOSIERY

Editor Textile World Record:

We are making ladies' hosiery from peeler and mercerized yarns and are having trouble in getting the length of the stockings uniform. Is this variation caused in the knitting process or to uneven shrinkage in dyeing? Halifax (2149).

Uneven lengths of ladies' hosiery can be caused by a number of things. In the first place the cause may be the cutting from the machine. Again it may be trimming too much off after turning the welt. I would suggest that "Halifax" get one machine right and use a weaver's pick glass to get all the other machines to make the same number of stitches to the inch. Then have the same number of links in all parts of the chain. After doing this there should be no reason for variation other than the slight variation in the yarn. If the peeler goods are made on the same machine that is used for mercerized yarn and the same size yarn is used without changing the machine, it will be found that the peeler goods will shrink more than the mercerized goods.

Cipango.

REMOVING LINSEED OIL FROM CAMEL'S HAIR

Editor Textile World Record:

I would like some information on how to remove all traces of linseed oil from camels' hair. I believe there is a formula for this.

Mannox (2133).

The questioner does not supply particulars as to the extent of the stains or the desired degree of thoroughness of their removal. If the goods affected are second hand oil bags, "Catalina" might make them relatively clean by boiling them with soda. To get them free from stain would be a more difficult and expensive matter. On referring the question to an organization which possesses commercial managers of wide experience and an eminent staff of chemists, the following reply was received:

"We express the opinion that the linseed oil stains upon camel hair, however caused, will not be removable by any ordinary scouring, even if boiled with soda. Linseed oil is one of the strongest drying oils and we have little doubt that the stains in question have dried and oxidized into a varnish, which we feel sure can only be removed by the dry-cleansing process, i. e., by extraction with gasoline, benzine or other solvent. We would suggest that some of the material be submitted to a firm of first-class dry cleaners of garments." James Strand.

The best method of removing linseed oil stains from camel's hair depends to a considerable extent upon the age of the stains. If they are comparatively new and the oil has not yet had a chance to become oxidized to a hard varnish it may be readily removed by treating with benzine, carbon tetrachloride or any of the usual cleansing fluids having these solvents as their basis. Carbon tetrachloride is a little more expensive than benzine for use, but it has the advantage of being non-inflammable, and consequently is not so dangerous to use by the ordinary operative as is the case with benzine.

If the linseed oil stains are comparatively old, the oil will have been converted into a hard varnish-like mass by reason of its oxidation. Under these circumstances the stains of course will be much more difficult to remove than if in the comparatively fresh condition. A little ether rubbed into the stain of old linseed oil will generally have the effect of softening up the varnish to such an extent that it can then be more completely removed by the use of one of the solvents previously mentioned. Ether, however, must be used with great care, as it is exceedingly volatile and also its vapor is highly inflammable. In place of ether, aniline oil is sometimes quite efficacious in softening up a varnish produced by the oxidation of linseed oil. J. M. Matthews.

The removal of linseed oil stains from camel's hair depends upon the extent to which the oil has become oxidized. As is well known, linseed oil is an oxidizing oil; that is, it takes up oxygen from the air, and gradually thickens, a property that makes it the most valuable oil for paint making, on account of its drying properties. Stains pro-

duced by straight linseed oil may be practically removed by the application of a mixture of alcohol and ammonia which is a most efficient solvent for any linseed oil, but it is doubtful if this method could be made available on a large scale.

If the stained camel's hair is thoroughly wet out in a light soap scour, and heated gradually to 125° F., and then the scour fortified with a solution of sal soda to make the bath moderately alkaline, and, while the temperature is maintained and the camel's hair is slowly washed, about a quart of kerosene is added, it is possible that the oil and the greater part of the stain may be removed. The second scour should be with soap only, while the last should be only a warm rinse. If bleaching is to be resorted to, only the peroxides should be used, as any traces of linseed oil are very likely to form discolorations if sulphur in any form is used for bleaching. Louis J. Matos.

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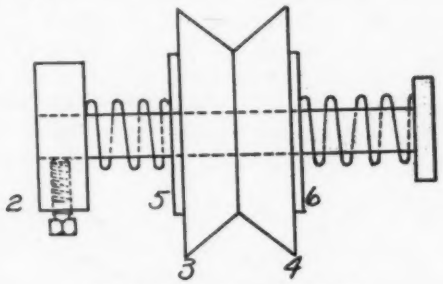
A SOFTENER FOR MERCERIZED YARNS

Editor Textile World Record:

Kindly give me a solution for softening mercerized yarns which are run over a roll on the winding frame. Allen (2150).

I would not advise using a softener for mercerized yarns, as better results can be obtained by running the yarn between paraffine rolls or discs. This will give the necessary amount of lubrication to make the



AN ATTACHMENT FOR A WINDER

yarn run smooth and easy. The illustration shows a very good attachment which can be easily made and put on the winder. This can be mounted on a block fastened on the winder in line with the yarn in such a manner that the yarn will always be between the discs. These discs can be made by melting paraffine and putting it in a pan to the depth of the desired thickness of discs. When not quite hard, cut with a can top the desired size and when cold bevel the edges as shown in the illustration. Get a round drawn rod steel and make the sleeve, 1, the size of the rod to run free. Then fasten in the block, as illustrated. Garhwal.

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DETERMINING PROPORTIONS OF WOOL AND COTTON IN A FABRIC

Editor Textile World Record:

Please give directions for determining the proportions of wool and cotton in a mixed fabric. Also inform us what else we need in connection with your Simplex yarn table to test yarns as to their respective sizes. Simplex (2136).

The proportions of wool and cotton in a mixed fabric are determined by weighing a sample, boiling it for ten minutes in a 5 per cent. solution of caustic potash or soda, drying and then weighing the residue, which is cotton. The wool is entirely dissolved by the boiling solution and the cotton is only slightly affected. If extreme accuracy is desired, 5 per cent. should be added to the weight of the cotton residue and the result is the weight of the cotton in the sample. The difference between this weight and the total weight of the sample before boiling is the weight of the wool. Example: A sample of wool and cotton mixed goods weights 60 grains. After having been boiled for ten minutes in a 5 per cent. caustic solution and dried, the residue weighs 20 grains. Find the proportion of wool and cotton.

20 grains + 5% = 21 grains cotton.
60 — 21 = 39 grains of wool.
21 ÷ 60 = 35% cotton.
39 ÷ 60 = 65% wool.

The Simplex tables indicate the count of any given size of yarn by the various systems of yarn numbering. For example: No. 20s worsted is equal to No. 13 1/3 cotton, No. 37 1/3 linen, 7 run woolen, or No. 22 1/2 metric.

The table also gives the weight of different lengths of each size of yarn, for example:

120 yards of No. 20s worsted weighs 75 grains; 50 yards, 31.2 grains; 25 yards, 15.6 grains; 12 1/2 yards, 7/8 grains; 6 1/4 yards, 3.9 grains. The yards per pound are also given, a pound of No. 20 worsted measuring 11,200 yards. The size of yarn can be determined only by measuring and weighing.

Knitting Department

THE KNIT GOODS SITUATION

Since our last report the primary market in the knit underwear end has continued very quiet, and while some lines are sold up for the coming fall season, many others are in a position to take on additional business for September and October delivery. There is not that eagerness on the part of any of the manufacturers or agents as would indicate a willingness to lower any prices to get additional orders, although the raw materials are not quite as firm as they were during the months of November and December when the opening prices were named. Stocks of winter weights in the hands of jobbers and retailers were never smaller than at the present time. Orders for quick shipment of medium and heavy weights continued to come in until near the first of March. This is taken as an indication of strength of the market and of an early demand for fall goods again.

There are many jobbers who carried over fairly good stocks of light weights into the present season and in consequence of that, did not place large orders in July last. Many of these are now looking about the market for summer underwear, and in many cases are being disappointed, as they find that most manufacturers are not in a position to take on additional light weight business. This is especially true where they are in quest of shaped vests and pants, as these manufacturers can take business only for very late delivery, if at all. It is not a difficult matter to get quick deliveries of straight ribbed vests and at about early prices. Some few lines, particularly plain stitch, sleeveless vests are scarce and advances of 2 1/2 to 7 1/2 cents per dozen are being asked on some numbers.

Considerable trouble is being experienced in getting delivery of men's low priced balbriggans, especially those to retail at 25 cents a garment. This applies to goods that were bought early for this spring's delivery and we learn of several instances where orders that were placed last July for February delivery have not yet been shipped.

Women's combination suits are being delivered promptly, but complaints are heard on account of the lateness of delivery of men's and children's combination suits. There are only a few lines of children's suits in the market and as the business on these has been very heavy, the shortage is accounted for in some measure by this.

As for men's suits, it is felt that some manufacturers have sold their production at prices that do not permit of as much margin as may be had on two-piece suits and it is intimated in some quarters that on account of this, shirts and drawers are being delivered first.

An interesting statement comes from one of the important factors in men's combination suit production to the effect that fully 75 per cent. of the men's light weight suits sold for summer have been taken in the three-quarter or half length and that only about five per cent. of the production is taken in long sleeves and ankle length.

A new feature in a ladies' combination suit is made by a Philadelphia manufacturer, who has applied for a patent. The advantages claimed for it are that it gives ample fullness where needed, the same as the three piece suit about which we have written before, but is an improvement on account of having no seams in front under the corsets.

An improvement on men's drawer bands has made its appearance recently, consisting of cloth straps and slide buckles on each side of the band just in front of the hips. These may be adjusted as desired after the garment is on. The advantages claimed are that they are easier to get at, also that the scope of adjustment is not limited to the space at which buttons are sewed on, as in the case of the strap back bands.

HOSIERY

There has been greater activity in the hosiery than in the underwear end of the market of late, possibly due to some extent to the almost frantic efforts of certain buyers to get delivery of goods to fill their orders. Most mills are well sold up and not only cannot put deliveries ahead of dates ordered, but on the contrary, are from three to eight weeks behind on orders that were taken early in the season. With the labor troubles brewing in many quarters, their deliveries will probably be still further behind as the season progresses. No cancellations are being received, it being apparent that jobbers are awake to the situation and aware that they could not improve matters by cancelling their orders, as it is practically impossible to place them with other mills. It remains for them to wait until the manufacturers can get the goods through the mills.

In the face of these conditions there are, of course, no low prices being made, but for June delivery, 1 1/2-pound 200-needle hose are selling at 77 1/2 to 80 cents, and 176-needle are offered at 72 1/2 cents; 2-pound 176-needle made with rib tops are shown at $1.02 1/2 to $1.05. Some lines of 144-needle goods have been advanced 2 1/2 to 5 cents per dozen for June and July delivery.

Low priced silk hose are in good demand and a more active call for mercerized goods to sell at 25 and 35 cents is noticed.

Lines of cashmere and wool hosiery are well under contract for fall delivery and some manufacturers have instructed their agents to take no orders from any new trade and that they have only a place for those who have had their lines in former years.

Considerable tariff talk is heard, but so far it has not affected the attitude of buyers to any extent for 1913 business.

We quote from a recent communication from a Chemnitz correspondent: "In regard to the Tariff, the hopes for a decided reduction in rates is slight in this market and while the market has been excited when changes were expected in former years, there is no excitement felt at this time. The makers have other outlets for their goods and a strong demand for fine hosiery for the United States would be a bad feature for the market, as it would drive the prices still higher than they now are. As stated in last mail, a few American buyers have placed some orders here after hearing that the domestic manufacturers were unable to supply the demand. They have anticipated the shortage in goods made at home and have procured foreign goods to take care of their business. Of course, they have paid high prices, for quantity had no effect on the maker, but they will have the goods to sell, while others will have difficulty in getting any at all and in case they do, they will pay still higher prices.

"As reported some months ago, long gloves are in big demand in this market and large orders for cheap and medium grades have been placed. The merchandise is being hurried out and shipped as rapidly as it can be made ready. Large duplicate orders have been received and in many instances have been refused, as manufacturers are unable to turn them out in the space of time allowed."

Some interest has been manifested recently by the report that American manufacturers have been exporting hosiery to Germany and underselling the German manufacturers. This has been followed up and it has been found that the reports originated from the fact that three or four concerns had been shipping a very small quantity of plain silk hose to the Kaiser's domain, but the aggregate has been so small as to be almost of no account.

Among the newer shades of silk hosiery seen in some of the exclusive shops to retail at $1.50 to $2.00 a pair, are Kelly green, coronation purple, Nell rose, kings blue and American beauty.

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In 1769, Richard Arkwright, a barber, perfected a spinning frame in which the thread was drawn out by a series of rollers, each pair revolving more rapidly than the one before. The yarn was twisted by the revolving of a fly attached to the spindle and wound on bobbins.

MILL EXPERIENCES

Under this head we will publish from time to time stories from practical mill men, telling of vexations and unusual difficulties which have occurred in different branches of mill work, and how they have overcome them. We invite mill men to send us an account of such experiences. We pay, of course, for all that we use. Facts told just as you would tell the story to a friend are what we want, not fancy writing.

MY EXPERIENCE IN A KNITTING MILL

BY WAYBROOKS

I had never before filled any other position than foreman in the knitting or finishing department of any mill. I was fairly well known to the machine builders, yarn salesmen, etc., and one day one of them informed me where a good man was wanted to take entire charge of a small plant. I arranged to meet the stockholders of this mill and in my talk with them they carefully explained the condition of things in general, also informing me that they thought it could be made to pay good dividends if the mill was properly handled. True, it was only a small plant consisting of twenty-five knitting and about thirty-five sewing machines, but the mill was well equipped and had plenty of help, so I took the job.

The following Monday morning I arrived at the mill at 6.30 a. m. The machines were supposed to start at 6.40. I found the engineer, a faithful old employe, there ready for work. About seven o'clock several of the operators arrived and started work, and by eight o'clock I counted twenty-seven operators on the sewing machines. The few that were missing had decided to take a day off. I took me only a few hours to learn that there wasn't one person in that mill inclined to be friendly toward me. This was a mill where the employes could do about as they pleased, going and coming at most any time of day.

The former superintendent had spent most of his time in the office. The other work was entirely up to the forelady, and I could tell by her attitude toward me that I was up against a big proposition that would require diplomacy. I did not feel a bit more elated when a few minutes later I entered the knitting room and saw how the machines were running in this department. There wasn't a machine in the room that was not making trouble of some kind for the knitters. A 12-inch machine was running with but one dog. Three machines had been set aside as junk. I robbed one of these machines and repaired the running machine at once. Others were dropping stitches or cutting holes. Needles with loose rivets were never removed. Yarn guides had been set too close to the needles. Grooves were worn in them causing the latches to bend whenever they passed a guide with the latch partly open. There were plenty of tools and extra parts in the mill and I at once got to work taking the machines apart, smoothed all the cams, and dressed the guides, reset the draw-in cams, evened up the cylinder cams, replaced worn out parts and the knitting machines literally "walked away". I selected one of the knitters who was anxious to learn, and allowed him to assist me in overhauling the machines, showing him at the same time how to set and adjust the machines. He was the first to work for my interest in the mill. This, of course, had its effect on the others, who in the course of a few weeks saw my determination, and looked upon my intrusion in a different light.

My next step was the finishing room and to say it was in a bad condition would be putting it mildly. I learned that the forelady in this department had been allowed to replace loopers in the Merrow machines. As these had never been properly adjusted they would soon wear to a point and drop stitches or were continually cutting threads. Besides making trouble for the operators, this would show on the garment after being worn. I was satisfied with the knitting room so the next few weeks I confined my efforts to the finishing department. This brought me in close touch with the operators and I made it a point to study them individually. I adjusted all the machines carefully, and each operator was made to feel that I was ready to do anything in my power to further their interests. In a few weeks things were running smoothly and everybody was at work at starting time and

worked until the regular hour at night. Of course all this resulted in an increased production.

The packing and shipping department also had its troubles. Frequent complaints came to us about the sizes being mixed, seconds packed with first goods, cases marked with the wrong address, etc. So I advertised for and secured a good man and in a short time this branch of the business was running like a well oiled bearing.

Next came the cutting room. The affairs in this room were appalling. Large pieces that could have been used for gussets or even small size sleeves were either cut into smaller pieces or carelessly thrown in the waste bags. I devised a plan whereby I could see at the end of each day's work how many shirts were cut, the sizes, and the number of rolls together with the weights that were used. The cutting was all done by scissors and I at once decided that this was where the big leak was. I installed an electric cutting machine, secured a reliable person who understood the correct system of laying up the cloth, dispensed with four of the cutters, and in two weeks' time the waste had dropped to next to nothing, and we were cutting double the quantity with four girls less on the pay roll.

The output which at first had been about 650 dozen a week, at the end of four months had reached the 900 dozen mark. Now I had an opportunity to look over the details. By this time I had the confidence of all the operators with the exception of the forelady and a few of her adherents and I promptly discharged her one day for insubordination. I replaced her with a bright, active woman who gave out the work and reported the amount of work finished each day per operator. I offered prizes to the one doing the greatest amount of work. This I found also had a tendency to spur them on to bigger results.

I repaired the knitting machines that had been thrown aside and added a few finishing machines and inside of two more months that little mill was turning out an average of 1500 doz. weekly. It would take a large amount of money to buy that plant today. I know the stockholders are satisfied. The best proof of that is the pay envelope. But it stands out clearly that one must study the help thoroughly for that is the secret of success in the management of a mill.

KNITTING FULL FASHIONED HOSIERY

This invention, recently patented, has for its object the knitting of a full fashioned blank comprising the leg, foot and heel flaps on a straight knitting machine without transfer, and ready for uniting or looping together to make the finished hosiery. The inventor gives the following description of the method: Hitherto the usual method of making a full fashioned stocking on a flat or

FIG. 1. FIG. 2

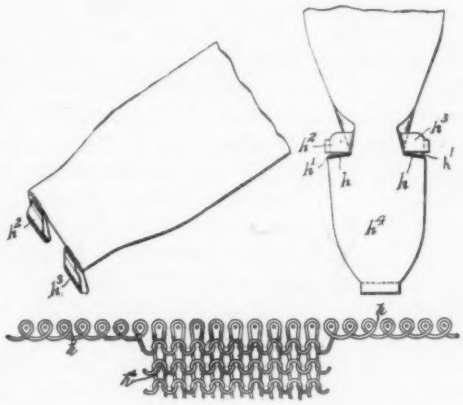

FIG. 3.

straight knitting machine, after finishing the leg and heel-flaps, has been to throw off the loops at the middle of the blank and continue knitting the two sides of the blank to constitute the heel-flaps, then removing from the machine and looping the ends of the leg together on a transfer bar, the loops of the middle portion of the leg being placed on the needles of the transfer bar and the heel-flaps taken up along the inner selvage on the transfer bar and then transferred to a footing machine to complete the stocking. This method involved the following disadvantages: First, transfer of the blank formed leg to a transfer bar; second, providing additional courses of loops at the middle portion of the leg, which have to be unraveled after one series of such loops have been

placed on the transfer bar, and this aside from unnecessary waste and irregular finishing of the heel as to the corners; third, difficulty in figuring accurately whether in production the leg corresponds to that of the foot, as it very frequently happens that either one or the other machine has to be stopped to ascertain whether the fabric is of the desired proportions; fourth, difficulty in transferring of materials from one machine to another in order to match up parts to be united or looped together uniformly; and fifth, time consumed in transferring and the labor necessary to finish the leg and begin the foot has occasioned unwarranted expense in making stockings on flat or straight knitting machines.

According to this invention, after finishing the stocking blank up to the portion where the heel-flaps begin, by means of an auxiliary presser-bar placed in action, the needles on the sides of the leg in which the loops for the heel-flaps are to be provided are pressed off while the middle portion remains upon the needles during formation of the heel-flaps. To secure the desired action of the bar, a double movement is permitted by a special cam connected with the bar through an arm and the altering of the movement of the needle-bar so that the needles do not touch the regular presser-bar, which is effected by changing the form of the cam controlling movement of said bar. After the heel-flaps are finished their loops are thrown off and only the loops of the middle portion of the stocking blank remain on the needles. Then the full width of the foot is taken up, but instead of forming only sinker loops on the needles brought into action again, which loops had previously been thrown off, a special constructive arrangement of mechanism is provided and arranged to be brought into action to pass the thread or yarn around each needle to enable strong or secure loops to be provided for uniting with the inside selvage of the thrown off loops of the heel-flaps, which action takes place after the entire stocking blank has been completed. It will be noticed that loops formed in this manner by wrapping about a needle or needles, are closed, having crossed legs or shanks.

After having formed one row of such loops the said auxiliary presser-bar is thrown out of action and fabrication of the foot is continued in the regular way until finished, whereby is effected, first a considerable saving of time and labor in the making of the complete fashioned blank; second, the avoidance of unequal proportions in production of knitted fabrics of the different parts of the blank; third, avoidance of transfer of the knitted fabric onto other machines to finish or the thread or yarn onto spools for subsequent use in the knitting operations; and fourth, appreciable saving in waste as well as assuring far more uniform knitting of leg, foot and heel in the production of a full fashioned stocking blank.

Fig. 1 shows a portion of a stocking blank; Fig. 2 is a plan view of a portion of a completed stocking blank, showing leg, foot and heel flaps ready to be united or looped together. Fig. 3 is a detailed view, enlarged, of the setting up course at the beginning of the heel flap of the stock blank.

The blank is knit with a narrowed selvage so as to provide a fashioned leg and ankle. Knitting is then suspended as to the central wales corresponding to the top of the instep of the stocking, then the knitting proceeds with separate selvage flaps at the extremities of the blank for the sides of the heel of the stocking. Then the heel flaps are cast off and a course is knit having such a number of wales as will form fabric for the beginning of the entire width of the blank corresponding to the top of the instep and length of the internal selvages of the heel flaps, with the beginning course including a series of setting up or beginning loops at its extremities corresponding to the wales in excess of those for the instep, when the foot blank is knit to complete the same. A second feature is to knit a narrowed selvaged blank to provide a fashioned leg and ankle. Then knitting is suspended of the central wales corresponding to the top of the instep. Then knitting of the separated selvaged flaps at the extremities of the blank for the sides of the heel of the stocking is proceeded with. Then casting off the heel flaps and knitting of a course having such a number of wales as will form fabric for the

beginning of the entire width of the blank corresponding to the top of the instep and length of the internal selvages of the heel flaps, the beginning courses of which include a series of setting up or beginning loops at its extremities for the beginning of the sole corresponding to the wales in excess of those for the instep, and then are united the internal selvages of the heel flaps and the setting up courses at the beginning of the sole and finally the uniting of the selvages of the remainder of the blank to the usual back seam. A third feature is to knit a narrowed selvaged blank having a fashioned leg and ankle, then to suspend the knitting of the central wales corresponding to the top of the instep, then to knit the separate selvaged flaps at the extremities of the blank for the sides of the heel of the stocking and then to cast off the heel flaps and to knit a course having such a number of wales as will form fabric for the beginning of the entire width of the blanks to correspond to the top of the instep and length of the internal selvages of the heel flaps, the beginning courses including a series of setting up or beginning loops having crossed shanks formed by wrapping the yarn about a needle or needles at its extremities, for the beginning of the sole corresponding to the wales in excess of those for the instep and before completing the knitting of the foot blank of the stocking.

KEEPING TRACK OF ORDERS IN A KNITTING MILL

Editor Textile World Record:

We have been working on a system for taking care of orders for sweaters as received from retailers, but so far have not been able to find anything that will work along the lines we want. If you can give us any assistance we will be greatly indebted to you.

Following is a sample of an order form received from a customer:

Sold to.....

Address.....

Terms..... *How Shipped*..... *When Required*.....

Number	Quantity	Price	Description	20	22	24	26	28	30	32	34	36	38	40	42	44
A50	6	42	Maroon							2	2	2				
B51	8	39	S. Grey							2	2	2	2	2		
C52	10	34	Cardinal							1	1	2	4	1	1	
D53	4	48	White										1	1	1	1
E54	6	39	Dark Grey								1	1	1	1	1	1
D55	5	24	Light Green					1	1	1	1					
C56	3	27	Dark Green					1	1	1						
C57	2	39	Purple			1	1									
E58	6	18	Royal Blue							2	2	2				
H59	3	36	Gold										1	1	1	
B60	10	36	Black							2	2	2	2	2		
D61	12	36	Navy								2	2	2	2	2	2
V62	4	27	Fawn					1	1	1	1					
D63	5	24	Brown						1	1	1	1	1			
C64	6	27	Slate						1	1	1	1	1	1		
D65	5	18	Brown-Fawn			1	1	1	2							
D66	3	22	Maroon-Grey					1	1	1						
C67	2	36	Fawn-Brown						1	1						

These are all sweater coats and made on flat machines.

This is a sample of several hundred orders that we receive every day through our agents from the retailer. We have thirteen sizes, fifty different stitches, and fifteen collars (the letter is for the collar and the number for the stitch or style). Also sixteen different colors which can be made into sixteen times fifteen different combinations.

What we wanted to do was to pick out a certain line in all its combinations and set the machines running on that until the order is finished, but we wanted to have the list so we could add to it every day as the orders came in. We want to make a recapitulation of every line and be able to add the different sizes and colors every day.

We have only eight knitting and six sewing machines, so we have to divide our work up to get it out on time. Mannix (2161).

In making up the forms I have assumed that each dozen will go to the finishing room

as soon as knit. Fig. 1 is a copy of a loose leaf sheet from an order book which I have entered in the order book. When giving a knitting order this recapitulation sheet

Order No. 1
Rating. Salesman Date
Checked by Customer
Terms Address
Ship
Where Stored How Packed.

Knit	Fwd	Case	Style	Description	Doz	20	22	24	26	28	30	32	34	36	38	40	42	44	Price	Amount
			A50	Maroon	6								2	2	2				42 00	252 00
			B51	A. Grey	8								2	2	2	2			39 00	312 00
			C52	Cardinal	10								1	1	2	4	1	1	34 00	340 00
			D53	White	4										1	1	1	1	48 00	192 00
			E54	Dark Grey	6								1	1	1	1	1	1	39 00	234 00
			F55	Light Green	5						1	1	1	1	1				24 00	120 00
			G56	Dark Green	3						1	1	1						27 00	81 00
			H57	Purple	2				1	1									39 00	78 00
			I58	Royal Blue	6							2	2	2					15 00	108 00
			J59	Globe	3											1	1	1	39 00	117 00
			K60	Black	10									2	2	2	2	2	36 00	360 00
			L61	Navy	12								2	2	2	2	2	2	36 00	432 00
			M62	Fawn	4					1	1	1	1						27 00	108 00
			N63	Brown	5						1	1	1	1	1				24 00	120 00
			O64	Slate	6						1	1	1	1	1	1			27 00	162 00
			P65	Brown-Fawn	4			1	1	1	1								18 00	72 00
			Q66	Maroon-Grey	3					1	1	1							22 00	66 00
			R67	Fawn-Brown	2						1	1							36 00	72 00

FIG. 1.

Recapitulation of Knitting Orders. Styles A-50.

	20	22	24	26	28	30	32	34	36	38	40	42	44
Order No. 1 3/1/13						2	2	2					
" 2 3/1/13					1	1	1	2	2	2	1	1	1
" 4 3/1/13											2	1	1
" 6 3/1/13						2	2	2	2	2			
Stock 3/1/13					1	1	1	1	1	1	1	1	1
Total					2	6	6	7	5	5	4	3	3

Record to Finished from 3rd Order Sheet

FIG. 2.

found very satisfactory. Fig. 2 is a sheet on should be footed each time and a notation which to recapitulate all styles as they are of the date and number of the knitting or-

der. In this way one can always tell how the orders stand in the knitting department. In making up this form for underwear I placed all orders on the same sheet of the same fabric and if there were different trims I noted this opposite the order on Fig. 2, can check them against Fig. 2. This gives a double check, prevents errors and keeps the office posted as to the standing in the knitting room of every order, without having to go outside for the information.

Brisbane.

Order No. 1

Style A-50 Yarn 2 of 2 Maroon Worsted This Order Must be Returned to Office as soon as Filled.

Remarks.			20	22	24	26	28	30	32	34	36	38	40	42	44				
							2	6	6	7	5	3	4	3	3				

FIG. 3.

and think this would also apply to sweaters of different trim.

Fig. 3 should go to the knitting room to be checked by the foreman as he gets the

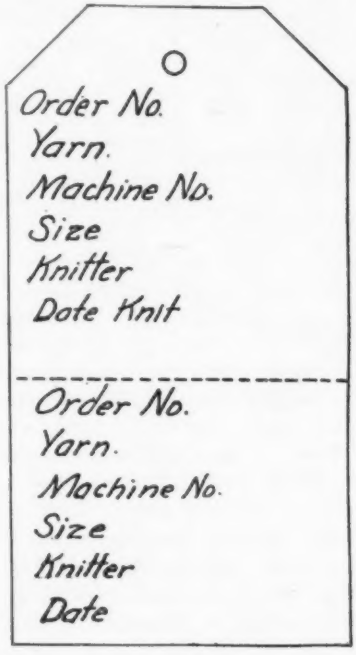

FIG. 4.

tickets, Fig. 4. When he has checked them he should tear off the lower part of the stub and send to the order clerk in the office who

THE MANUFACTURE OF DRESS BRAID

BY MONTCALM

The manufacture of dress braids is probably the smallest branch of textile industry, but is somewhat complicated owing to the use of many different materials. The first step, upon deciding what pattern or design of braid is to be made, is to make out a ticket, designating the article number, size, color and quantity and describing the various materials, the number of bobbins and the number of ends required to make the braid. This ticket is sent to the winding department. Requisition slips are then made out for the amount of each kind of material needed in the braid. These slips are given to the stock room where they are filled. The materials are returned to the winding department, accompanied by the slips, and are distributed to the winders. The material wound on spools is sent to the doubling room, where it is doubled to the required number of ends on braider bobbins.

This doubling process involves considerable difficulty when artificial silk is used or when large number of ends, sometimes as high as 50 ends, are doubled. All the ends must be wound with an even tension, so as to avoid loops of single threads in the braiding operation.

The doubled yarn is taken to a table provided for the purpose, where a girl or boy proceeds to put onto a pegged board or tray

the different bobbins as called for by the pattern. As each pattern is completed, it is sent to the braiding room accompanied by the original ticket, on which is marked the machine the pattern is to be made on.

The braider now takes the pattern in hand. After carefully noting what the pattern is, he gives the bobbins to a setter-up, with instructions as to the size of tension weights to use. These tension weights are oblong pieces of lead covered with tin, measuring from 1/4 to 4 inches in length, with a wire loop at the top through which the material is threaded. One of these is inserted inside of each bobbin carrier, but before being used the setter up must rub them with an oily cloth in order to insure free and easy motion as they slide up and down in the carrier.

The bobbin carriers on the most improved machines consist of a four cornered hollow pipe about 9 inches long, with two plates at the bottom 1/2 inch apart. A thread guide running parallel with the hollow pipe is also on this shoe. Should the pattern be white or some light color, it is necessary to clean out each carrier, to remove all grease and oil. The tension weights in this case are not oiled, but on the contrary are wiped dry, as oil or grease is taken up by the threads as they pass through the guides and is easily seen in the finished braid. The best part of a day is often spent in cleaning a machine for white or light colored work.

The setting up or threading of the braider bobbins require considerable skill, it being necessary for a setter-up to thread many hundreds of bobbins a day in order to keep the machines running. A hook is used in threading. The thread is first brought through an eye in the center of the guide on the carrier and then through an eye in the automatic stopper, which is attached to the carrier; then through an eye at the top of the guide, then through an eye in a latch, which rests on the ratchet of the bobbin to prevent it from revolving backwards, then through the wire guide of the tension weight, and last through an eye at the top of the hollow pipe carrier. This threading operation is repeated until all the bobbins are threaded.

The setter-up having threaded the bobbins and also the under bobbins or warp threads, if such are employed in the pattern, reports to the fixer, all set up. The fixer now tackles the hardest part of the braiding operation, that of attaching the different parts to the machine, needed to make the pattern. First the former is put on. This is a circular piece of iron, with an opening, in which the threads are interlaced. The former must be of a requisite size and the inside of the circle thoroughly polished with emery cloth, so that the fine silk threads will slide through without being scraped or cut. The selvage needles are then adjusted. These needles play an important part in the making of the braid, as a suitable and proper adjustment is essential to bring out a perfect braid with straight edges, which are made on these needles. Next, the take-up gears are put on, their size determining the tightness of the weave. After these gears are on, the beaters are placed and regulated, so as to assist the formation of the threads as they enter the former. In many patterns, strands of horse hair or wire, or some other pliable material is used to assist the threads or to form various designs, ribs or loops. The machine is now ready and an operator is assigned to watch it.

If no difficulty arises, the machine will run until the bobbins are empty, but such cases are the exception and not the rule. Usually in making a braid out of artificial silk, much trouble is experienced on account of the ends constantly breaking, the material being of a fibrous substance and easily breaking under the constant friction in the braiding process. This trouble is aggravated on a damp day, as the artificial silk has a tendency to shrink when moist.

The shoes on the bobbin carriers are inserted in the grooves of the machine and by means of cut or horn gears under the top plate of the machine, the carriers are thrown from one gear to the next, until the complete circuit has been made. In the event of the ends breaking, an automatic stop motion attached to the carrier throws the clutch gear out of mesh with the driving gear or belt pulley, bringing the machine to a stop. Often the braid is found to be running

somewhat irregular and the fixer cannot locate the trouble, but overcomes it by taking the bobbins off the troublesome machine and putting them on another machine of the same kind. The trouble may have been with some part of the machine, the tension weights, or the material, but close scrutiny failed to disclose just what the trouble was. As the braid is formed or woven it is taken up by press rollers and delivered into a receiving can.

The smaller machines, that make narrow braids and cords, are built to operate from 2 to 7 heads by one drive, seven pieces of braid being made in the one operation. These 7 ends are allowed to fall into one can. The bobbins having run out, the braid is cut off and is sent with the ticket to the cleaning room, where it is separated. In some braid mills a number of girls are employed to clean the braids before being finished, while in other mills the cleaning is done as the braid is wound on cards, after being finished. Cleaning consists in cutting off the broken ends of thread close to the braid and also cutting out any and all imperfections that may have been made during the braiding process.

After cleaning the finisher takes the braid in hand. In some cases the braid must be singed, by running it through a row of gas flames to burn off the fine hairs of the material. Then it is run through a steam box to soften and then put through a pressing process, by means of hot revolving rollers. The various kinds of braids require different process of finishing.

The finisher now sends the braid to the examiner. Here the braid undergoes a thorough examination, The original tickets are filed for reference.

The braid now goes to the measurer, who measures off the different quantities needed, as per order checks. The measuring is usually done by special devices, but when the braid is very heavy or of a fine, delicate texture, it is measured by hand. The braid is wound on cards or into bolts on a machine, the different kinds and sizes of braids requiring different shapes and sizes of cards. After the winding of the braid it is handed to the banders, who attach the required band bearing the pattern number, size, color and quantity, according to instruction on the order check. This band is put around the braid, being held firm by gummed posters; in some cases the band itself is gummed. The braid is now packed into boxes, following the instructions on the order check, putting one, two or three pieces in a box, and in cases of small braids, four to six pieces. The boxes are then labeled ready for shipment.

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RIDGY EFFECT IN KNIT GOODS

Editor Textile World Record:

On a 16-gauge spring needle machine having four feeders, using 23 1/2-grain yarn (basis 20 yards) what variation in the yarn would there have to be to make the cloth look ridgy? Would two grains either way do it? Robson (2152).

The ridgy appearance referred to is evidently the separation of the wales which results from using yarn too fine for the gauge. The difficulty is aggravated by making the stitch too tight. The cause and aggravation generally go together, because a tight stitch is necessary with fine yarn in order to make a firm fabric. The count of the yarn (23 1/2 grains per 20 yards) is equal to No. 7.1 cotton. This is too light according to the following rules:

Rule 1. Square of gauge divided by 40 gives cotton No. $(16 \times 16) \div 40 = 6.4$, Cotton No.

Rule 2. Square of gauge divided by 42, gives cotton No. $(16 \times 16) \div 42 = 6.1$, Cotton No.

Rule 3. Square of gauge divided by 54 gives cotton No. $(16 \times 16) \div 54 = 4.74$, Cotton No.

Rule 4. Dividing 2,638 by the square of the gauge gives the grains per 6 1/4 yards $2{,}638 \div 256 = 10.7$ grains per 6 1/4 yards = No. 4.85, Cotton No.

From this it seems that the yarn is on the light side. Since the variation, two grains, is 8 1/2 per cent., it is likely that the fabric made with the lighter yarn would be appreciably more ridgy than that made with the 23 1/2 grain yarn. Ernest Tompkins.

Dyeing, Bleaching, Finishing, Etc.

RECLAIMING CAUSTIC SODA DURING MERCERIZING

BY RAFFAELE SANSONE

The reclaiming of caustic soda can be considered as one of the most important steps made in the mercerizing of cotton goods during the last decades. When mercerizing was first started on a fairly large scale very few could have imagined that the then simple treatment of the goods, in which a certain quantity of strong caustic soda lye appeared to be consumed, would have been gradually transformed so considerably as to require complicated plants, and that the same caustic soda which had served for the treatment of the cloth, or yarn, would be used, through their means, over and over again, reducing to such an extent the price of the mercerized goods that these would soon be among the cheapest on the market.

This great transformation was brought by the introduction of the process for reclaiming caustic soda, that not only necessitated certain alterations in the mercerizing range, but also required the application on the latter of special apparatus for the extraction of the strong lyes used in the treatment of the goods, thus increasing and complicating the whole process.

When the material is impregnated in the strong caustic soda measuring from 30° to 35° Be., it is first converted, according to many chemists, into an alkaline additive compound, which is decomposed in the following washing with hot water, to which mercerized goods are subjected, with the separation of the alkali as caustic soda that is taken in solution again, and the convertion of the cellulose of the cotton into hydrocellulose. This compound, when produced with certain varieties of cotton and afterwards stretched by suitable means, yields the well known shiny effects that characterize mercerized articles.

Mercerized cotton is therefore a distinct chemical modification of cellulose, and during its formation the caustic soda remains, although exerting a very active part in the transformation of the cotton, after the treatment quite unaltered, and if it were not for the impurities contained in the goods mercerized, and the action of the carbonic acid in the air that forms a certain quantity of sodium carbonate, it could be used over and over again, requiring only a simple concentration between each treatment. The elimination of these impurities with the convertion of the sodium carbonate into caustic soda, and following concentration of the lyes thus treated, constitute the process of reclaiming caustic soda.

In practice the process is, however, not so simple as it appears in theory. The first and most difficult portion of the operation consists in the extraction of the caustic soda from the yarn or cloth treated. With yarn goods the alkali is recovered generally in the same trough employed for the impregnation in strong caustic soda. For this purpose the goods are first saturated in the strong caustic soda and stretched in the usual manner. A greater portion of the strong liquor is generally thrown back in the impregnation trough after this last operation, and if the yarn cannot be removed over a fresh trough for the washing out operations, the strong lye is drawn off and replaced by hot water, or a weak washing from some preceding batch of mercerized yarn, and the yarn which has been conveniently loosened is revolved in the same for some time. Practice will enable the operator to determine when no more caustic can be taken up by the hot washing bath. By noting the strength of the liquor left in the trough, under the stretching bars of the yarn mercerizing machine, it will be easily seen if a third washing is advisable. If the second washing is of sufficient strength it is run in with the first in a special tank ready to be sent to the recovering department; otherwise it should be collected elsewhere and used for washing the next batch of yarn. If the yarn

has been subjected before mercerizing to a thorough boiling out very little foreign matter will find its way in the washings, thus simplifying considerably the following recovery process.

In order to remove the last possible traces of caustic soda the goods are hydro-extracted after the last washing and all liquor obtained added to the last washings. They are then treated, if necessary, in the hydro-extractor with a weak acid solution, which can be used several times as very small quantities of salt are formed in each treatment of the goods. When it is seen that all traces of caustic alkali have been expelled, the yarn is washed on the same machine with running water, and the washing continued till no further trace of acid is found in the waste liquors. A clever mercerizer usually checks this point by keeping a small piece of litmus paper in the stream flowing out from the hydro-extractor. In this way nearly all the caustic soda can be recovered from the yarns without affecting in any way the brilliance of the finished goods. In fact the complete cleansing out of all size and impurities which are necessary in the process places the yarn under the best conditions for producing the finest effects.

With cloth the case is much more complicated, for the material is treated very rapidly, being kept all through the mercerizing process in a straight stretched condition, and more efficacious methods of recovery have to be used than with yarn. In the first plants the strong liquor left in the goods as they came from the padding machine, was extracted by means of special suction boxes, placed under the cloth while the fabric passed through the tentering machine. A series of sprinklers, placed just above the cloth, supplied the hot water necessary for washing out a certain portion of the lye. On coming out from the tenter the goods were further washed with hot water in a wooden wash box furnished with press rollers. In this way, however, very large quantities of wash waters were produced, and it was not always possible to extract all the lye from the cloth, which had to be neutralized with a certain quantity of weak acid contained in a following box.

By a closer study of the question it was found that during the stretching it was not necessary for the goods to contain the strong liquor, and that all excess could be eliminated conveniently, even before their passage to the tenter, without impairing in any way the beauty of the finished goods. This was accomplished by passing the cloth through a series of high pressure squeezing rollers. These pressed out a great portion of the strong liquor that was collected and added to the padding trough to be used along with fresh liquor in the mercerizing.

The cloth as it entered the tenter contained only a small amount of caustic, which, however, being still too large to be neglected, was extracted on the tenter itself. Several hot water sprinklers fitted just above the range, squirted boiling water on the goods, which was sucked through the cloth from underneath by a series of suction boxes connected to a vacuum pump, and sent to the caustic and evaporating department where the remaining portion of the reclaiming process was completed. As the goods left the tenter they were further washed with hot water in a special washing machine supplied with several squeezing rollers, and the weak alkali solution that was still produced used for the working of the sprinklers above the tenter. This permitted the complete extraction of the caustic soda from the goods, giving excellent results. All classes of goods could be treated without reducing in any way the amount of alkali recovered. In a recent German patent it was proposed to undertake the above extraction process by means of a series of special suction boxes situated above and under the cloth. Through the upper series hot water or steam could be sent through the goods and the cloth was pressed by an India rubber surface above and underneath. This process does not seem to have had much application so far, owing probably to the complication of the upper suction boxes and to their India rubber surfaces, which encumber considerably the working of the range.

Another system of extraction, that has

had some application, especially in Germany where it has been patented, is based on washing the cloth, after the stretching on the range, in two closed iron cases. In these the cloth is passed through several compartments containing boiling water and which are isolated from one another. Between each of these compartments, in order to diminish as much as possible the quantity of alkaline liquor left in the goods after each passage, a pair of squeezing rollers is placed that press a greater portion of the liquor back into the bath. By a continual repetition of the operation the caustic soda that still clings to the goods is gradually reduced in amount, and it is possible to wash it out completely before the goods leave the last iron case. It is said, however, that the quantity of wash water is larger in this plant to that mentioned above in the first method, and this tends naturally to increase considerably the expenses of a subsequent caustification and concentration.

The next operation in the process of reclaiming caustic soda is that of the caustification and purification of the washings coming from the mercerizing room, which is more or less complicated in accordance with the quantity and nature of the impurities contained in the goods mercerized. If these have been subjected to a thorough boiling out process for the extraction of sizing materials, the weak lyes obtained after mercerization are simply brought to the required strength by the addition of a certain quantity of calcined soda and quick lime. This is generally sufficient to prepare the liquor for concentration, as the sediment of calcium carbonate formed on depositing transports with it the majority of the impurities. The natural coloring matter which, despite the best boiling out processes, still finds its way gradually in the liquor, is generally neglected as it very seldom brings any inconvenience in the subsequent mercerization. If on the other hand the boiling out process is omitted, the washings as they reach the caustification become so charged with size, starch, Island moss, China clay, etc., that they require a special purification process, which not only complicate considerably the whole process of recovery, but make the work in many cases by far too expensive to constitute any economy in the process of mercerization.

The writer can remember cases in which the purification could be carried out successfully by the additions of large quantities of lime, that was assisted in some instances by a small addition of lead acetate. The liquor thus purified could be used advantageously for some time and especially during the summer months when the heat of the atmosphere kept the concentrated lye at a certain density. After some time, even with the greatest precautions, the lye became so thick as to stop up all delivery tubes. This necessitated the throwing away of large batches of concentrated lye, ruining for a certain time all the advantages of the reclaiming process. Moreover the mercerized goods, owing to the formation of a sort of combination between the caustic soda and the thickening, retained a certain amount of size which hardened the goods, dulling considerably the luster of the cloth after schreinering.

These inconveniences in mercerizing sized goods must be borne in mind at the present time, when there is an ever increasing tendency to size heavily the goods manufactured with cotton of very inferior quality. In fact it should be considered in many cases if it is really worth while mercerizing certain goods, as sometimes a superior or equal shine to that obtained by the passage through caustic soda of unmercerizable cloth, might be produced by a simple calendering on properly boiled off cloth which has not even seen the padding machine or range. Some works do not consider this important point and very often lose much time and are put to much useless expense in mercerizing goods that cannot be properly mercerized owing to the unsuitable quality of the cotton.

The concentration of the purified and strengthened lyes is carried out by a very large number of plants that have been more or less perfected. One of the first which found a certain application in the largest works is Scott's evaporating plant. This plant works on a very simple principle. If

we consider for instance a three-boiler plant, the steam generated in the first boiler, during the concentration of the lye itself, passes in the lower portion of the second boiler, where it is used for the heating of the same. In the second boiler the steam developed during the boiling is also utilized for the heating of the third boiler. As, however, the temperature in the same would not be sufficient to boil the liquor, which in this case is of a certain strength, a vacuum pump is applied. By a suitable distribution of the liquor from boiler to boiler, which takes place through special taps at the side of each boiler, the lye can be easily brought in the last boiler up to 35° or 45° Be. In this way, with exceedingly little steam, very large quantities of liquid can be concentrated in a very few hours with comparative ease. Other plants are also in use for this purpose which are based on somewhat similar principle, such as the Kestner apparatus. This plant, however, instead of utilizing the heating surface of a very large number of boiler tubes, as in the case with Scott's plant, contains only a very few tubes, but of very great length. Such a disposition changes somewhat the conditions of the boiling. In the first case it takes place on a much broader surface and special condensers are placed at the top of each boiler, to prevent the production of froth, which by passing down the tubes of delivery for the steam would run to waste through the steam traps. This is quite different in the second case, for the production of the froth is increased to the utmost, producing a sort of film that covers the sides of the few boiler tubes exposing a very large surface. Many other systems of evaporators have been constructed for this purpose, some of which substitute the boiler tubes by special plates, while in others special devices have been adopted. With a properly worked caustic soda reclaiming plant, as much as 98 per cent. of the caustic soda left in the cloth after padding should be recovered, but owing to small losses that always occur through the treatment of the wash waters this figure is never reached.

THE SALTS OF THE HYDROSULPHUROUS ACID

BY DR. A. KRAEMER

These salts were discovered by Schutzenberger and further investigated by Bernthsen. The solution of salts of this acid which is obtained by stirring zinc dust into sodium bisulphite proved to be useful for the indigo dyer, since the vat prepared with it is durable and freer of impurities than when set with any other reducing agents. As soon as it became possible to manufacture solid preparations containing zinc, calcium or sodium hydrosulphite, they found very extended application also in calico printing for discharging such colors as are decomposed by reduction.

All these preparations, however, have the drawback of oxidizing too readily in the air. A discharge paste made up with them loses in strength in a short time, and even by means of applying an insoluble zinc double salt, this could not be quite overcome.

It, therefore, was a progress of highest importance when the discovery was made that the salts of the hydrosulphurous acid, just like the bisulphites, combine with aldehydes and ketones, especially with formaldehyde, yielding compounds which are thoroughly stable at the air under ordinary temperature; these combinations, when heated moderately with or without the alkali, split off the aldehyde readily, developing most energetic reducing qualities.

It thus became possible to print a stable discharge on the fiber, which by the simple process of steaming could be made to develop a discharging power previously unknown. The product, sodium formaldehydehydrosulphite, is on the market under the name of Rongalite C single (Badische) hydrosulphite N F (Farbwerke-Hoechst Co.), and Hyraldite A (Cassella Color Co.).

Soon after this discovery was made Bauman, Thesmar and Frossard found that certain dissolving agents split the product into sodium bisulphite, which does not show any reducing qualities, and a compound of double the reducing strength. This product is considered to be the formaldehyde sodium

compound of the non-isolated sulfoxylic acid. It can also be obtained by reducing formaldehyde bisulphite with the corresponding amount of zinc powder, or by the reaction between one molecule of formaldehyde, one of sodium hydrosulphite and one of caustic soda. This product is manufactured by several companies: by the Badische Aniline and Soda Fabrik as Rongalite C; by Leopold Cassella & Co. as Hyraldite C extra; Hydrosulphite N F conc. (Farbwerke-Hoechst Co.). Since these products, in their reducing power, are twice as strong as formaldehyde hydrosulphite, they have found the preference, wherever a concentrated discharge is wanted. One final step was still to be made. The new discharge worked perfectly with Azo colors, the Chromophore group of which, when once split off by reduction, would never build up again, which means that white discharges of these colors would not turn yellow. It was a difference proposition with indigo and other vat colors. The reduced products would easily oxidize at the air again, so that discharged pieces which are not very quickly washed out after steaming, never show a good white. Several ammonium and sulfinium compounds, which contain a benzyl group, split this group off in the heat and combine with the vat dyestuffs forming an insoluble condensation product which is thoroughly stable at the air. The Badische Aniline and Soda Fabrik calls these bases, leukotropes or discharge salts. Leukotrope O is used only for color discharge work, yielding bright orange effects on an indigo ground. Leukotrops W, which is the sodium salt of the bisulfonic acid of Leukotrope O, combines with reduced vat colors to a compound which is soluble in alkali and, therefore, can be washed off leaving behind a pure and durable white discharge.

A mixture of equal parts of Leukotrops W and Rongalite C is sold under the name of Rongalite C L and Hydrosulphite C N and with the aid of this product indigo discharge work has come to a point where it can hardly be improved upon. There are quite a number of special brands on the market, for instance, formaldehyde-sulfoxylate, with an addition of Induline scarlet, Anthraquinone and other catalytic or contact substances for discharging Napht. Bordeaux. These products go under the name of Rongalite Special, Hydrosulphite N F Special and Hyraldite Special. Another product, Rongalite C W extra, Hydrosulphite C W extra, Hyraldite C W extra contains a certain amount of zinc oxide, and is especially adapted for raised goods and for wool discharges.

THE DYEING OF KAPOK

Editor Textile World Record:

I have read with interest the various articles which you have published recently in regard to kapok and its uses and am writing to give you some further information that your readers may find of value. I am sending you under separate cover samples of kapok yarn and finished cloth. Kapok is used largely in Europe in the manufacture of plush and other upholstery goods and I know of a number of large shipments of such fabrics to the United States. The material is especially adapted for coarse yarns made of kapok and of mixtures of cotton, silk, wool and kapok.

The process of dyeing, patented by the Chemnitzer Actien Spinnerei, is exactly the same as when treating cotton yarns. It is, however, necessary to soak the kapok yarn thoroughly. Substantive dyes are absorbed quickly and intensively by the kapok yarns and even less coloring fluid is required than when dyeing cotton yarns. All other classes of coloring material, such as the Diamin colors with after treatment, substantive colors with mordants, acid colors, Immedial colors, even Katigen colors, can be used without further treatment with the same result as to fast dye. When using the last named care must be taken not to use too much alkali as the latter gives a rather raw feeling to the yarn. Indanthrene colors containing chlorine can be used with perfect success for special purposes.

The manufacture of live-saving articles from kapok is entirely in the hands of Hartwig-Cas-Gesselschaft m. b. H. The product of this company has found a good market everywhere and they have recently received

orders from Hongkong and Manila where the articles have been subjected to exhaustive tests and have been very favorably commented upon by the press.

Yours very truly,

Chemnitz.

Dye Recipes

The following recipes appear in the Dyers' Supplement, which is issued each month by the TEXTILE WORLD RECORD. The Supplement contains the colored samples, dyed according to recipes given. The selection of samples is carefully made, and it is the aim to show shades which are of especial interest to the dyer, and which the requirements of the market demand. The Dyers' Supplement is a 16-page pamphlet, in convenient form for preservation. Subscription price for the Dyers' Supplement $1.00 per year.

Recipe No. 49

BLUE ON WORSTED YARN

Fast Cyanine Blue on 100 lbs. worsted yarn. Prepare the dye bath with

5 lbs. Fast Cyanine Blue.
(F. E. Atteaux, 174 Purchase St., Boston Mass.)
10 lbs. Glauber's Salt.
4 lbs. Sulphuric Acid.

Recipe No. 50

NAVY BLUE ON WORSTED YARN

Naphtazine Navy Blue 156 on 100 lbs. worsted yarn. Prepare the dye bath with

5 lbs. Naphtazine Navy Blue 156.
(F. E. Atteaux, 174 Purchase St., Boston, Mass.)
10 lbs. Acetic Acid.

Enter at 120° F., bring to a boil, boil 30 minutes and then add

3 lbs. Sulphuric Acid,

and continue the boiling 1/2 hour longer.

Naphtazine Navy Blue 156 gives an excellent shade of navy blue of good fastness, and will be found an excellent color for general use.

Recipe No. 51

RED ON WORSTED YARN

Acetyl Red B B X on 100 lbs. worsted yarn. Prepare the dye bath with

2 lbs. Acetyl Red B B X.
(Badische Co., 86 Federal St., Boston, Mass.)
15 lbs. Glauber's Salt.
4 lbs. Sulphuric Acid.

Enter at 140° F. and dye at a boil one hour.

Acetyl Red B B X possesses good fastness in nearly all respects.

Recipe No. 52

BLACK ON WORSTED YARN

Kresol Black X 5 B on 100 lbs. worsted yarn. Prepare the dye bath with

7 lbs. Kresol Black X 5 B.
(Geisenheimer, 189 Front St., New York, N. Y.)
10 lbs. Glauber's Salt.
4 lbs. Acetic Acid.

Enter at 120° F., dye at a boil for one hour and then exhaust by adding

4 lbs. Sulphuric Acid,

and boiling 1/4 to 1/2 hours longer.

Kresol Black X 5 B possesses very good fastness to light.

Recipe No. 53

RED ON WORSTED YARN

Chrome Red A B on 100 lbs. worsted yarn. Prepare the dye bath with

4 lbs. Chrome Red A B.
(Read Holliday & Sons, 11 Gold St., New York, N. Y.)
5 lbs. Acetic Acid.
10 lbs. Glauber's Salt.

Start the bath cold and boil for 30 minutes. Then add

1 lb. Sulphuric Acid,

and boil for 30 minutes. Then add

2 lbs. Bi Chrome.

and boil for another 1/2 hour.

Chrome Red A B possesses excellent fastness to light and washing and are fast to fulling and do not stain white silk.

Recipe No. 54

BLUE ON WORSTED YARN

Fast Acid Blue F F on 100 lbs. worsted yarn. Prepare the dye bath with

4 lbs. Fast Acid Blue F F.
(Read Holliday & Sons, 11 Gold St., New York, N. Y.)
5 lbs. Acetic Acid.
10 lbs. Glauber's Salt.

Start the bath cold and after adding the acetic acid and Glauber's salt boil for 30 minutes and then add

1 lb. Sulphuric Acid,

boiling for another 30 minutes. Then add

¼ lb. Bi Chrome,

and boil 1/2 hour.

Fast Acid Blue F F possesses excellent fastness to light and washing and is also fast to fulling, not staining white silk.

Recipe No. 55

YELLOW ON WORSTED YARN

Thio Indigo Yellow Paste on 100 lbs. worsted yarn. Prepare the dye bath with

10 lbs. Thio Indigo Yellow G W Paste.
(Kalle & Co., 530 Canal St., New York, N. Y.)
20 lbs. Puropol Solution (1 = 10).
1.5 lbs. Caustic Soda Sol. 77° Tw.
1.25 lbs. Hydrosulphite (Powder)

made up to 10 gallons with water. The dyestuff should be stirred up with the puropol solution at about 150° F. and the mixture then stirred for some time at that temperature, or until reduction is complete. This will be indicated by a clear brownish yellow solution.

To the dye vat containing water at 120° F. add

1¼ lbs. Hydrosulphite Powder,
4 lbs. Ammonia,

and

4 lbs. Glue (freshly dissolved).

Then add the reduced dyestuff, stir, let stand for a short time and begin dyeing. After dyeing squeeze and oxidize in the air, and finish by boiling in a bath containing

3 lbs. Sulphuric Acid

for 15 to 20 minutes.

Thio Indigo Yellow G W possesses excellent fastness to light, fulling, carbonizing, and finishing in general.

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Recipe No. 56

BLACK ON WORSTED YARN

Amine Black K L on 100 lbs. worsted yarn. Prepare the dye bath with

6 lbs. Amine Black K L.
(Berlin Aniline Works, 213 Water St., New York, N. Y.)
10 lbs. Glauber's Salt.
2 lbs. Acetic Acid.

Enter at 120° F., dye at a boil for 3/4 of an hour, then add

2 lbs. Sulphuric Acid,

and boil 1/2 hour longer, to exhaust bath.

Amine Black K L possesses good fastness in nearly all respects.

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Recipe No. 57

RED ON WORSTED YARN

Brilliant Milling Red R on 100 lbs. worsted yarn. Prepare the dye bath with

3 lbs. Brilliant Milling Red R.
(Cassella Color Co., 182 Front St., New York, N. Y.)
20 lbs. Glauber's Salt.
4 lbs. Acetic Acid.

Enter at 105° F., raise to a boil in 20 minutes, boil 3/4 hour, then add

3 lbs. Sulphuric Acid,

and continue boiling until bath is practically exhausted.

Brilliant Milling Red R gives a brilliant shade of red, possesses high coloring power, and excellent fastness.

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Recipe No. 58

GREEN ON COTTON YARN

Direct Green G G X on 100 lbs. cotton yarn. Prepare the dye bath with

2 lbs. Direct Green G G X.
(Innis Speiden & Co., 46 Cliff St., New York, N. Y.)
20 lbs. Common Salt.

Enter at 160° F. and dye at a boil for one hour.

Direct Green G G X possesses the characteristic properties of the direct cotton colors.

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Recipe No. 59

BROWN ON COTTON YARN

Direct Brown G O on 100 lbs. cotton yarn. Prepare the dye bath with

3 lbs. Direct Brown G O.
(Innis Speiden & Co., 46 Cliff St., New York, N. Y.)
20 lbs. Common Salt.

Enter at 160° F. and dye at a boil for one hour.

Direct Brown G O possesses the characteristic properties of the direct cotton colors.

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Recipe No. 60

BLACK ON COTTON YARN

Plutoform Black 3 G L on 100 lbs. cotton yarn. Prepare the dye bath with

6% Plutoform Black 3 G L.
(Farbenfabriken Co., 117 Hudson St., New York, N. Y.)
2% Soda Ash.
25% Common Salt.

Enter at 180° F. and dye at a boil for one hour.

Plutoform Black 3 G L will be found to be an excellent color for discharge work in calico printing.

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It is related that Queen Philippa's crown was redeemed from pawn at Cologne, in 1342, by the king sending a sufficient quantity of wool over to produce the required sum, $12,500, the price at which it sold being 31 cents per pound.

New Machinery and Processes

This department is designed to present from month to month a brief mention of new machinery, devices and processes being brought out in this country and abroad, that are of interest to the textile manufacturers. It is not a list of patents but of improvements on the market, the idea being to present to our readers a systematic monthly record of new machinery, etc., of interest to textile mill men.

Whenever possible we endeavor to make a personal investigation of the new machinery and processes described in this department. In the absence of such personal investigation we must necessarily rely upon information obtained from those who control the machines and processes.

We invite machine builders and others to send us such information for this department.

Safety Set Screw. The Allen Mfg. Co., Hartford, Conn. An improved form of the Allen safety set screw which makes it impossible for the clothing of workmen to become caught on projecting parts of the screw.

Hank Cloth Indicator. The Saco-Lowell Shops, 77 Franklin St., Boston, Mass., are placing on the market an improved hank indicator, which is described in this issue.

Automatic Yarn Changer for Knitting Machines. The National Automatic Knitter Co., Lehigh Ave. and Mascher St., Philadelphia, Pa., have recently perfected a four-finger automatic yarn changer for the National automatic machines. It is especially advantageous in making boot silks. The yarn changer gives absolute control to four different yarns, any one of which may be introduced at any point desired, and the thread for the double sole, high spliced heel is controlled by this mechanism.

Hand Stripping Card. The Howard Bros. Mfg. Co., 44 Vine St., Worcester, Mass. An improved hand stripping card of which the board and handle are made of metal. A description appears in this issue.

Tension Controller for Woolen Cards. George S. Harwood & Son, 53 State St., Boston, Mass. An expanding pulley for adjusting the tension on the sliver of Apperly and other diagonal or intermediate card feeds. A description appears in this issue.

Loom. Bosset & Cachard, 59 Rue Richelieu, Paris, France. A new type of loom in which two pieces are woven side by side, each with two tight selvages. The loom is also built for weaving four pieces at a time, two fabrics being superimposed.

Folding and Winding Machines. S. Holmes, Manchester, England. An improved cloth folding and winding machine especially adapted for warehouses.

Hoop Cutter. W. Edwards, Liverpool, England. A tool for cutting the metal bands on cotton bales. It is said to be simple and very effective.

Finishing Process. J. P. Bemberg, Barmen-Rittershausen, Germany. An improved process of imparting luster to textile goods by calendering.

Yarn Moistening Machine. Textilmaschinenfabrik B. Cohnen, Grevenbroich, Germany. A machine for moistening yarn. It is used by spinners, the object being to increase the weight and improve the handle and appearance of the material.

Automatic Loom. Butterfield and Dickerson, Burnley, England. An improved automatic cop-changing loom which is said to embody a number of important improvements.

Open-shed Dobby. George Hodgson, Bradford, England. An improved dobby head motion which is modelled to give increased durability and ease in leveling the harness.

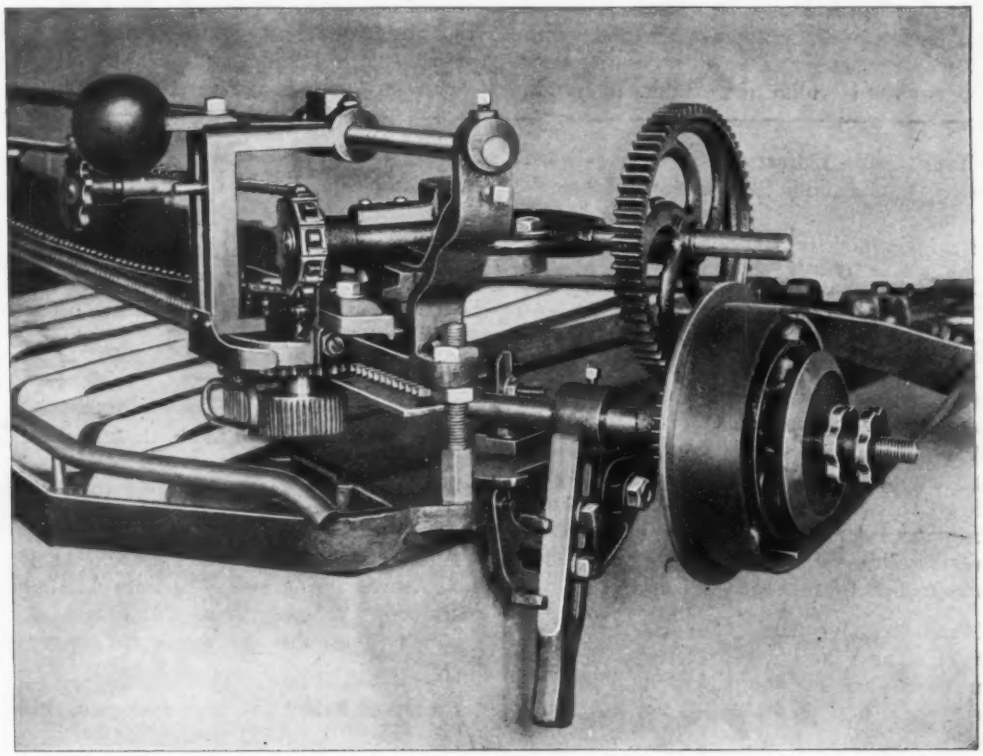
Automatic Loom. Robert Hall & Sons, Bury, Eng. An improved automatic cop changing loom which has been tested with good results in Lancashire mills.

Machine for Damping Cloth. James Farmer & Sons, Salford, Eng. An improved machine for damping cloth by a spray. Very uniform results are obtained and the degree of moisture imparted to the goods can be closely regulated.

A TENSION CONTROLLER FOR APPERLY FEEDS

Every woolen carder will recognize at once the great advantage of a device by which the tension of the sliver can be easily and accurately adjusted on Apperly and other diagonal and intermediate card feeds. Such a device has been found in the Geb patent tension controller manufactured by George S. Harwood & Son, 53 State St., Boston, Mass. It consists of an expanding pulley, the diameter of which can be changed 1 1/2 inches simply by turning a hand wheel or nut and without the necessity of stopping the feed. The accompanying illustration shows an Apperly feed equipped with the expanding pulley. No one with even a slight familiarity with woolen cards will have any difficulty in recognizing at once not only the simplicity, but the efficiency of this tension controller. The pulley is mounted in a specially constructed bracket which will fit easily on any intermediate feed, allowing a change in the position of the pulley, in order to make any adjustment of the belt that is required by reason of a change in the diameter of the pulley.

All parts of the pulley and the support are substantially made and the pulley is provided with a flange to prevent the belt from slipping off. The advantages of this tension controller are summarized as follows:



A TENSION CONTROLLER FOR APPERLY FEEDS.

1. It is no longer necessary to stop the card in order to adjust the traveller speed.

2. There is no longer any need of laggings of leather, yarn or twine on the traveller pulley.

3. The production is increased by reason of the continuous running of the card. The tension on the sliver can be kept exactly right, reducing the number of sliver breakages. In case the sliver breaks much less

time is required than heretofore to stop and readjust the speed.

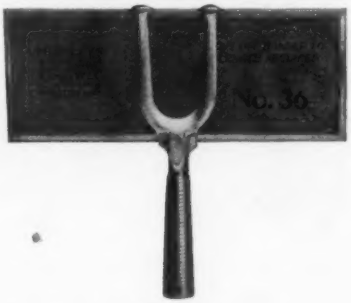
4. The work is greatly improved by reason of the prevention of bad feeds which cause imperfect yarn.

5. The tension controller results in a decrease in the waste by preventing the breakage of the sliver.

AN IMPROVED HAND STRIPPING CARD

The illustrations show different forms of an improved hand card manufactured by the Howard Bros. Mfg. Co., 44 Vine St., Worcester, Mass. The board and handle are made of metal which eliminates the possibility of splitting. No leather bindings

NUMBER 1.
ATTACHED PRESSED STEEL HANDLE.



NUMBER 2.
DETACHABLE ALUMINUM HANDLE.

are used and consequently the difficulty of their becoming loose and wearing out is prevented. The tacks and nails used in the old time hand card frequently mark or face the wire of cylinders, doffers and rings while stripping. This is prevented in the new card by the use of steel clamps which protect the edges of the card as well as clamp them to the board, and which present a smooth face to the cloth. Teeth are punched through this clamp giving a holding point every quarter of an inch in place of the tacks formerly used. Provision is made for attaching a strap to protect the fingers, and leather can be wound on the end of the handle if desired.

ATTACHED WOOD AND ALUMINUM HANDLE,
EXACT SHAPE OF WOODEN STYLE.

Mill men who have used this improved hand card are loud in their praises of it, the following being a statement by one user:

"We have used three pairs of the old style cards and are now on the fourth pair as against one pair of your new style cards. We like the new cards very well, and you may send them on all our future orders."

THE NEW DEPARTURE BALL BEARINGS FOR SHAFTING

The loss of power in manufacturing plants between the engine and the machines that do the work is so large as to be at first thought almost beyond belief. The extent of this loss has, however, been repeatedly demonstrated by careful tests in many mills. It has been found that where the amount of power consumed is not considered to be large enough to necessitate economy in transmission, the loss frequently reaches the amazing figure of 75 per cent. of the total power generated. The full significance of this statement can be best appreciated when one considers that but 25 per cent. or one-fourth of the power delivered by the engine or electric motor is utilized in driving the machinery. The remainder of this energy

is consumed by slipping belts and friction in bearings. The friction causes deterioration of the bearings, requires excessive use of lubricant to minimize its evil effects and these parts of the power transmission system demand continual attention in order to keep the loss as low as possible.

Tests made by Prof. C. H. Benjamin in a number of Cleveland manufacturing plants show the wide variation in friction loss that exists in different factories. In one plant it took 80.7 per cent. of the engine power to drive the shafting, which was the maximum, whereas the most efficient layout required 39.2 per cent. of the engine power to drive the shafting. The average percentage or power consumed by the shafting of the eleven plants where tests were made was 59.1 per cent.

Even in plants where economy in power transmission is a large factor in production costs, the most careful maintenance scheme will show frictional losses of from 20 to 40 per cent. In cotton mills the average loss will be 25 per cent., even when extreme care is taken to secure both efficient transmission and economical application of power. The following table clearly shows the power loss in textile industries, tests having been made in eight plants:

POWER LOSS IN SHAFTING OF TEXTILE INDUSTRIES

Mill No.	Load, Machinery and Shafting	Load, Shafting Alone	Per Cent Used Shafting
1	199 H. P.	51 H. P.	25.6
2	472 "	111 "	23.6
3	486 "	134 "	27.5
4	677 "	190 "	28.1
5	759 "	172.6 "	22.7
6	235 "	84.8 "	36.1
7	670 "	262.9 "	39.2
8	677 "	182 "	26.8

It is with the object of reducing this loss of power from friction that the New Departure ball bearings have been designed by the New Departure Manufacturing Co., Bristol, Conn., shown in the accompanying illustrations. The New Departure bearings have been for years in general use for machine and motor vehicle work and the results have been so satisfactory that the bearings have been adapted for shafting hangers, making possible a large saving of power by reducing the amount of friction. The power absorbed by shafting may be reduced 25 to 50 per cent. on the investment per year. In some cases 100 per cent. has been returned on the investment. This means that in from one to two and one-half years the ball bearing installation will be entirely paid for by the energy saved. The journals remain as good as new, because in this work, anti-friction

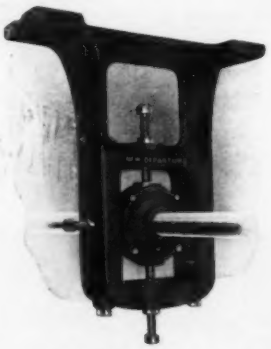


FIG. 1 NEW DEPARTURE CEILING HANGER.

bearings of the ball type are practically indestructible and require a minimum of attention.

Owing to their low coefficient of friction, ball bearings do not need the constant attention and oiling that plain bearings re-

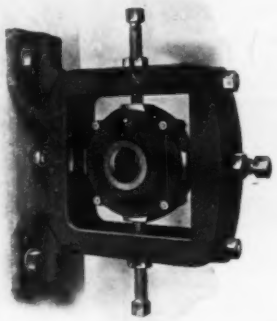


FIG. 2. NEW DEPARTURE POST HANGER.

quire. One filling of lubricant suffices for six months, and there is no deterioration of the parts of the bearing. The oil remains clean and free of metallic particles and retains its lubricating qualities for extended periods. There can be no hot bearings because friction is reduced to a minimum, and ample lubrication is always assured, so expensive shutdowns and line shaft bearing replacements are eliminated. By lessening the consumption of lubricant, the amount

needed is reduced to a low point. There is not only decided economy in the saving of oil, but the amount of time needed to go over the line shafts, and the attendant cost are also reduced to less than 10 per cent. of that needed with plain journals. Ball bearings are housed in retainers that hold oil,

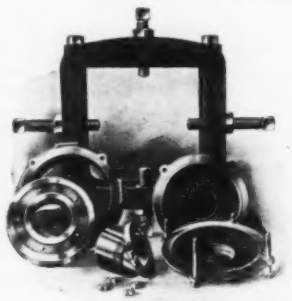


FIG. 3. PARTS OF NEW DEPARTURE POST HANGER.

and there are no dirty, greasy drippings as from plain bearing hangers. In certain lines of manufacture, notably in the textile industries cleanliness is essential and ball bearing hangers fulfill this as well as all other requirements.

When heavy driving pulleys are installed

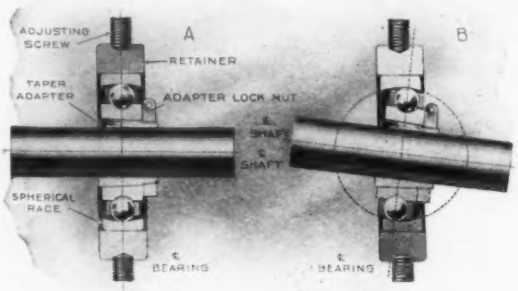


FIG. 4. DEFINING METHOD OF COMPENSATING FOR SHAFT DISTORTION BY SELF-ALIGNING SPHERICAL BALL BEARING.

on shafting, it is good practice to mount them close to the point of shaft support in order to reduce bending stresses in the shaft to as low value as possible. With ball bearing boxes it is possible to put the pulleys very near the hanger, reducing the amount of shaft distortion appreciably. As there is so little friction, there is practically no wear in ball bearings that have been properly selected and installed, and they are the most durable as well as the most efficient form of anti-friction bearing known to modern engineers.

With plain bearings, considerably more power is required to start the shafting than is needed to keep it turning after it has acquired a certain momentum. Whenever the line shafting is started, severe stresses are imposed in the power transmission elements and head shafts that even the most careful power application cannot overcome. With ball bearing hangers, it does not require appreciably more power to start the shafting than it does to keep it revolving after it has received the initial impulse. This is an important advantage.

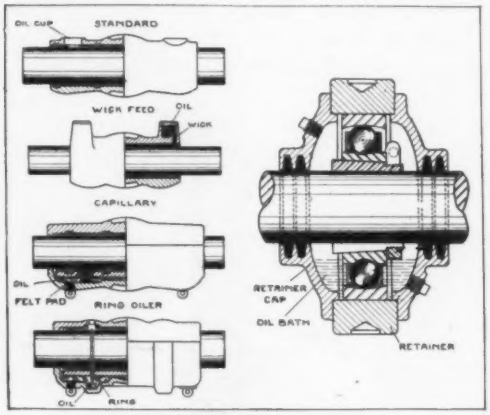


FIG. 5. COMPARING SHAFT JOURNALS TO SHOW PERFECT LUBRICATION AND OIL RETENTION OF BALL BEARING BOX.

Another advantageous feature is found in ball bearing shaft journals. When plain boxes or rollers are utilized that bear directly against the soft steel shaft, wear of the shaft is inevitable. With ball bearings there is no deterioration of the shaft because the balls run in a hardened and ground raceway that is supported by and revolves with the shaft. It is claimed that shafting supported on New Departure ball bearing hangers can be run at twice or three times the speeds possible with plain journals. This means a reduction in size of all the components of the power transmission system. The shafting may be lighter; smaller and lighter pulleys; couplings and clutches may be used; and belt widths as well as pulley diameters may be reduced because of the higher belt speeds possible.

The New Departure bearings are designed to carry the load with a maximum efficiency. The frame is neat in form, light in weight, but very substantial in construction, keeping the shafting in alignment under all conditions. Fig. 5 shows clearly the advantages of the New Departure hanger in retaining the oil and excluding the dust. The ball bearing is immersed in a bath of oil, insuring ample lubrication and the oil is used over and over again.

THE ALLEN SAFETY SET SCREW

The illustration shows the construction and method of using the Allen set screw, manufactured by the Allen Mfg. Co., Hartford, Conn. Every mill man knows the danger of accidents from the use of the ordinary projecting set screw on shafting. This

THE ALLEN SAFETY SET SCREW WITH WRENCH.

danger is entirely eliminated by the use of the Allen set screw, which sinks below the surface of the metal into which it is screwed, and thus leaves nothing to catch onto the clothing of the workers. The hexagon wrench fits in the socket in the head of the screw which can be screwed up as tight as desired. Tests have shown that a three-quarter-inch Allen set screw can be tightened with a wrench two feet long so as to produce a pressure of 7 tons on the point of the screw. After this severe test the screw showed no indication of having been used. The screw cannot break if it fits the hole. The screws are made from high-test steel bars and will stand as much strain as projecting screws of the same diameter. The Allen screw is to be recommended not only for its safety feature on revolving parts, but for all set screw purposes. It is much easier to keep the machinery clean when all the screws are flush or below the surface.

Following are typical letters from users of the Allen set screws:

Willimantic, Conn., Aug. 18, 1910.
The Allen Manufacturing Co., Hartford, Conn.

Gentlemen:—The Allen patent safety set screws are as efficient as screws with projection heads, with the advantage of being safe and reliable. We consider them the best designed and manufactured safety set screws yet made, and in every way all you claim for them.

Yours very truly,
De W. C. Hill, Master Mechanic,
The American Thread Co.

. . .

Hartford, Conn., July 14, 1910.
The Allen Mfg. Co., City.

Gentlemen:—At your request I have made a thorough test of the Allen patent safety set screws and find them decidedly the strongest and best flush-head set screws I have seen. In my forty years' experience in building machinery of various kinds, I have realized the need of such screws, and it is unfortunate that this screw did not materialize years ago.

Yours very truly,
R. G. Henry, Pres.,
The Henry & Wright Mfg. Co.

THE DISTRIBUTION OF NORTHROP LOOMS

The February issue of "Cotton Chats" has an interesting analysis of the sales of Northrop looms in the United States, from which we take the following:

Dividing the country into two groups of mills, one including those in the New England, Middle and Western States and the other including the Southern States, we find 108,687 Northrop looms in the former and 131,832 Northrop looms in the latter, or a little over 21 per cent. more Northrop looms in the South than in all the rest of the country put together. South Carolina with 71,488 remains the banner state, Massachusetts ranks second with 40,711.

The Northrop looms in each state in the United States, including orders to January 1, 1913, are as follows:

New England States

Connecticut	7,567
Maine	16,588
Massachusetts	40,771

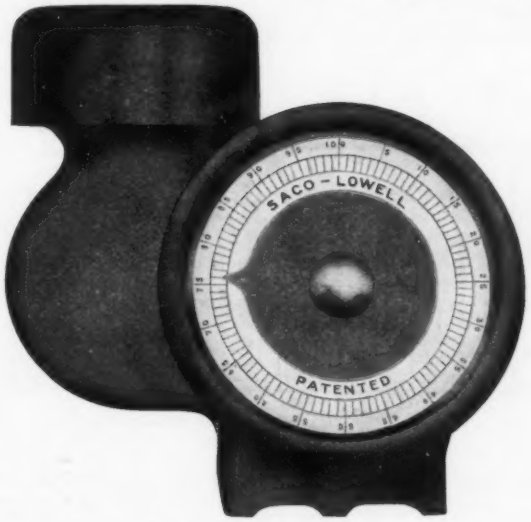
New Hampshire	14,329
Rhode Island	17,085
Vermont	1,402
Middle and Western States	
California	121
Delaware	20
Illinois	96
Indiana	956
Missouri	978
New Jersey	2,295
New York	5,937
Pennsylvania	542
Southern States	
Alabama	10,004
Georgia	21,468
Louisiana	714
Maryland	133
Mississippi	389
North Carolina	19,324
South Carolina	71,488
Tennessee	2,962
Texas	14
Virginia	5,345

During 1909 22,389 Northrop looms were shipped; in 1910, 22,855; in 1911, 21,015; in 1912, 20,814; Jan. 1, 1913, 10,809. Of the total shipments of Northrop looms in 1912, about two-thirds replaced old common looms. This replacement was to a much greater extent in northern territory where it was slightly over 78 per cent., than in southern territory where it was about 45 per cent.

Concisely stated, Northrop looms, compared with common looms, require less weavers; earn more wages per weaver; improve the quality of goods; and weave more yards per annum.

THE IMPROVED HANK CLOCK INDICATOR

The Saco-Lowell Shops, 77 Franklin St., Boston, Mass., are placing on the market the improved hank clock indicator shown in the accompanying illustration. While it is designed especially for the Saco-Lowell frames, it can be applied to other makes of drawing, roving, spinning and twisting machines. The indicator is of simple and durable construction with no glass to break and no loose parts to get out of order. It has been thoroughly tested in a number of mills and has given complete satisfaction as a means of obtaining accurate records of production and knowledge of costs.



A HANK CLOCK INDICATOR.

WOOL WASHING MACHINE

The machine, shown in the accompanying illustration, has been designed in France and recently patented in this country. It provides for the separate electrolytic treatment of the scouring liquid. Instead of electrolyzing the liquid of the alkaline bath or grease water in which the wool is treated, the electrolysis of such liquid is produced externally to such bath. The wool is thus not exposed to the direct action of the electric current, but the potash salts contained in the grease undergo such action with the result that their bases being electrochem-

ically modified their solution acquires powerful degreasing properties.

The liquid from the bath in wool washing or degreasing machines is extracted by beating or agitating it vigorously so as to emulsionize in a high degree the greasy matters extracted from the wool in order to facilitate the separation thereof; such separation is produced, and finally the degreased liquid is submitted to electrolytic action. The solution after being thus degreased and suitably electrolyzed is afterward reintroduced, as long as it does not attain a density of from 10° to 12° Baume, into the vats or troughs of washing or degreasing machines for use on fresh quantities of wool.

The greasy solution is always in movement; it leaves the washing machine to be emulsionized, degreased and electrolyzed, then when completely regenerated and rendered fit for degreasing purposes it is returned to the machine to act on the wool. After being for some minutes in contact with this solution, which is constantly degreased and electrolyzed, the wool is freed from the grease salts that it contains in its natural state, and is completely or almost completely degreased.

The invention also consists in apparatus for carrying out the improved process set forth, such apparatus being readily applicable, with some slight modifications, to the types and systems of washing or degreasing machines at present in use.

Fig. 1 shows the apparatus for carrying out the process.

The washing machine is shown in fine lines, the apparatus for carrying out the degreasing process being indicated in heavier lines.

The apparatus comprises a reservoir to receive, through a gutter or channel, g, the liquid or greasy solution extracted by the pressers, X, of the wool being treated and proceeding from the washing trough, Y, of the washing machine. A small perforated plate or rose, a, serves to retain any foreign bodies contained in the solution. A receiver, B, into which the solution from the reservoir, A, is delivered by a high-speed rotary

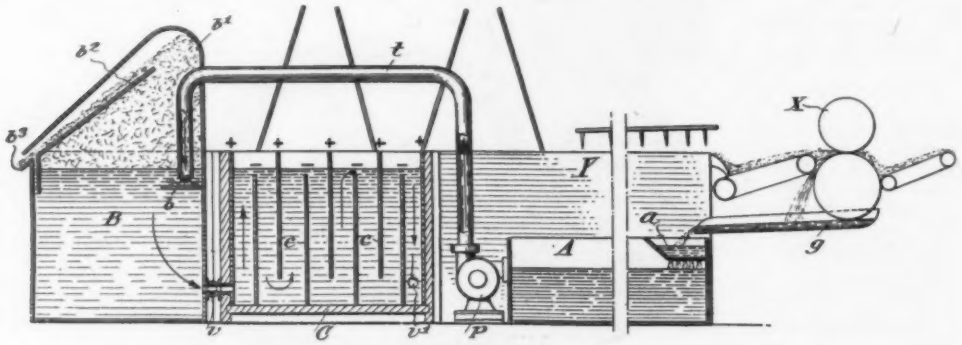


FIG. 1. A WOOL WASHING MACHINE.

pump, p, through a delivery pipe, t. This pipe leads to the receiver, B, above a partition, b, and said receiver, B, is surmounted by a dome, b^1, having an inclined plane, b^2, and external exhaust, b^3. An electrolyzing tank, C, made of insulating material but preferably of wood and in which positive and negative electrodes, c, connected to a source of electric current are arranged. Liquid from the receiver, B, is delivered to the tank, C, through a branch, v, fitted with a valve and located near the bottom of the receiver, B. The electrodes, c, which may be of carbon, lead, or any other conducting metal, are placed so as to form a baffle arrangement with the object of setting up in the direction of the arrows a circulation of the liquid toward a valve-controlled pipe branch, v^1, establishing communication between the tank, C, and the trough, Y, of the washing machine.

Personals

William Muir, widely known in cotton mill circles as the general northern representative and selling agent for the Potter & Johnston Machine Co., Fales & Jenks Manufacturing Co., T. C. Entwistle Co., Woonsocket Machine & Press Co., and Easton & Burnham Machine Co., has recently been appointed assistant managing director of John Hetherington & Sons, Ltd., textile machinery builders of Manchester, England. He has gone to England to assume his new duties at the home works. Mr. Muir is an Englishman, and before coming to this country acquired a practical knowledge of textile machine building at the Accrington shops of Howard & Bullough. When he first came to this country he was connected with the Howard & Bullough American Machine Co. of Pawtucket. Several years ago when the sales' departments of the concerns mentioned above were consolidated, Mr. Muir assumed the position of selling agent for the northern territory, and later acted as consulting expert. As John Hetherington & Sons do a large business with this country, Mr. Muir's successful American experience and his knowledge of conditions in this country, coupled with his practical mechanical knowledge of machine building, makes him peculiarly well fitted to fill the duties of his new position. His many friends in this country, while regretting his departure, congratulate him and the Hetherington Co. on this new connection and wish him the success which they know he will attain.

Frank Harrington, foreman of the finishing department at the Anchor Knitting Mill, Cohoes, N. Y., has resigned to accept the position of assistant superintendent in one of the large knitting mills in Piqua, Ohio.

George A. Carr, for over twelve years in charge of the carding department at the Lawton Spinning Co., Woonsocket, R. I., has severed his connection with that company to assume the position of overseer of carding for the Manville Co., Manville, R. I. The help in the carding department presented him with a seventeen jewel solid gold watch and the overseers, second hands and office help presented Mr. Carr with a solid gold chain.

Anton C. Bramer has accepted the position of superintendent of the silk mill operated by McCullum & Post, Nazareth, Pa.

William Ey, overseer of weaving at the Saxtons River Woolen Co., Saxtons River, Vt., has resigned.

W. N. Hammer, president of the Dillon Mill, Dillon, S. C., has resigned. He is succeeded by J. W. Langford, who was secretary and treasurer of the company.

Ben Holden, overseer of carding at the Manhasset Manufacturing Co., Putnam, Conn., has severed his connection with that company.

N. F. O'Rourke has accepted the position of overseer of finishing at the Jefferson Manufacturing Co., Jefferson, Mass. He comes from Monson, Mass.

Duncan Latimer, overseer of finishing at the Continental Worsted Co., Providence, R. I., has resigned. He is succeeded by P. F. Gallagher, formerly overseer of finishing at the French River Textile Co., Mechanicsville, Conn.

William Schofield, overseer of weaving at the Continental Worsted Co., Providence, R. I., has resigned. He is succeeded by Joseph Wood, formerly of North Adams, Mass.

Bjarne Krohn has accepted the position of overseer of finishing at the Hewson Pure Wool Textile Co. Ltd., Amherst, N. S., Canada. He comes from Toronto, Ont.

John Hartley, overseer of carding and spinning at the Aetna Mill, Watertown, Mass., has severed his connection with that company. Mr. Hartley has been in the employ of this firm for a number of years.

P. A. Bolt has accepted the position of overseer of carding at the Apalache Mills, Arlington, S. C. He was formerly employed at the Jackson Mills, Iva, S. C.

J. L. Paschall has returned to his old position as overseer of weaving at the Home Cotton Mills, St. Louis, Mo. He comes from Utica, N. Y.

W. A. Biggs, formerly overseer of carding at the Brogon Mill, Anderson, S. C., has resigned to accept a similar position at the Camperdown Mills, Greenville, S. C.

D. I. Williams has accepted the position of overseer of carding at the Hannah-Pickett Mills, Rockingham, N. C. He was formerly employed as superintendent of the Marlboro Mills No. 3, McColl, S. C.

Alexander Davies has accepted the position of overseer of weaving at the Lauerdale Mills, Meridian, Miss. He was formerly employed at the Avondale Mills, Birmingham, Ala.

J. J. Bates has accepted the position of overseer of spinning at the Gainesville Cotton Mills, Gainesville, Ga. He comes from Buffalo, S. C.

A. D. Martin has accepted the position of overseer of weaving at the Fountain Inn Manufacturing Co., Fountain Inn, S. C. He comes from Shelby, N. C.

W. H. Still has been appointed superintendent of the Millfort Mill, Fort Mill, S. C. He was formerly employed as overseer of carding and spinning at the Chadwick Hoskins No. 5 Mill, Pineville, N. C.

Thomas Drake has accepted the position of overseer of spinning and twisting at the Piedmont Mills, Egan, Ga., succeeding C. T. McElvy. He was formerly employed at the Martel Manufacturing Co., Egan, Ga.

John G. Kearns has accepted the position of overseer of finishing at the Davis & Brown Woolen Co., Uxbridge, Mass.

John Adams has succeeded Walter W. Simmons as paymaster at the Stark Mills, Manchester, N. H. Mr. Adams comes from St. Stephen, N. B., Canada.

Frank Hurd has accepted the position of overseer of spinning at the Geneva Mill, Wanskuck Co., Providence, R. I. He formerly held a similar position at the Brown Manufacturing Co., Dover, Me.

George W. Hall, purchasing agent and paymaster for the U. S. Worsted Co., Uswoco Mill, Lawrence, Mass., has resigned to accept a position in a large shoe factory at Haverhill, Mass.

Henry A. Cole, overseer of finishing at the Davis Brown Woolen Co., Uxbridge, Mass., has resigned his position to accept a similar one with the Burlington Mill, American Woolen Co., Winooski, Vt.

James Hogg, superintendent of the Bigelow Carpet Co., Lowell, Mass., has resigned. Mr. Hogg was formerly employed at Amsterdam, N. Y., and has again returned to Amsterdam to take up his duties in the position which he formerly held.

O. K. Smith, who has been employed as assistant superintendent of the M. Heminway & Sons Silk Co., Watertown, Conn., has severed his connection with that company. He is succeeded by Frederick Slason.

William A. Brown, second hand in the card room at the Geneva Mill, Wanskuck Co., Providence, R. I., has severed his connection with that company.

J. H. Tierney has accepted the position of overseer of finishing at the Darling Manufacturing Co., Holden, Mass. He was formerly employed at the Intervale Mills Corporation, Quinebaug, Conn.

William H. Rider has accepted the position of overseer of finishing at the Lawrence Dye Works, Lawrence, Mass. He was formerly employed at the Waterhouse & Howard Worsted Mill, North Adams, but later with the Hoosac Worsted Mills.

W. A. Jolitz has been appointed superintendent of the Utica Willowvale Bleaching Co., Chadwick, N. Y. He was formerly superintendent of the Bellman Brook Bleaching Co., and has succeeded the late R. I. Tobey.

Richard Toas has been promoted to the position of superintendent of the Dominion Textile Co., St. Anne's Mill, Montreal, P. Q., Canada.

T. Astbury has accepted the position of overseer of carding at the Dominion Textile Co., St. Anne's Mill, Montreal, P. Q., Canada.

J. R. French, superintendent of the Statesville Mills, Statesville, N. C., has resigned to become part owner of the West Point Mills, West Point, Ga.

H. V. Deaver has accepted the position of overseer of carding and spinning at the Great Falls Manufacturing Co., Rockingham, N. C.

S. W. Hedgepath has accepted the position as overseer of carding at the New Century Mill, South Boston, Va. He was formerly employed at the Eureka Mills, Chester, S. C.

R. W. Gibson has been appointed superintendent of the Georgia Manufacturing Co., Gainesville, Ga.

H. A. Shirley, formerly employed as overseer of carding at the Apalache Mills, Arlington, S. C., has accepted a similar position at the Monaghan Mills, Greenville, S. C.

J. M. Allen has accepted the position of overseer of weaving at the Shelby Cotton Mills, Shelby, N. C.

C. L. Lever has accepted the position of overseer of spinning at the Shelby Cotton Mills, Shelby, N. C. He comes from Greer, S. C.

L. C. Lovell has accepted the position of overseer of spinning at the Marlboro Mills, No. 3, McColl, S. C. He was formerly employed at the Great Falls Manufacturing Co., Rockingham, N. C.

W. F. Fowler has accepted the position of overseer of dyeing at the Rossie Velvet Co., Mystic, Conn. He was formerly employed at the Locke Mills, Concord, N. C.

Edward Ferrel has accepted the position of overseer of carding at the Kosciusko Cotton Mills, Kosciusko, Miss. He was formerly employed at the Lauderdale Mill, Meridian, Miss.

James Martin has accepted the position of overseer of weaving at the Avondale Mills, Huntsville, Ala. He was formerly employed at the Merrimack Mills, same place.

Albert Sykes, overseer of finishing at the Kennebec Mills, Fairfield, Me., has resigned to accept a similar position with the Webster Woolen Co., Sabattus, Me.

Francis P. Gallagher has been appointed overseer of finishing at the Continental Worsted Co., Providence, R. I. He was formerly employed at the Paragon Co., same city, but later with the Plainfield Woolen Co., Central Village, Conn.

T. F. Cuddy, overseer of spinning at the Atlantic Mills, Lawrence, Mass., has resigned to accept a similar position with the Mohawk Valley Cotton Mill, Utica, N. Y., succeeding N. K. Drew.

Fred Wink has accepted a position to act as sole representative in Vermont and New Hampshire for the Fairbanks, Morse Co., manufacturers of internal combination engines, pumps, dynamos, motors, etc. Mr. Wink has had a wide acquaintance among manufacturers and his many friends will be pleased to learn of his success.

Anthony Moore, superintendent of the Globe Yarn Mills, Fall River, Mass., has resigned his position and is succeeded by Benjamin A. Fahey, overseer of carding at the mill.

Benjamin Horsfall, overseer of dyeing at the H. T. Murdock & Co.'s mill at Protcorsville, Vt., has resigned to accept a similar position with the Middlesex Co., Lowell, Mass., succeeding William J. Crossley.

Edward A. Donahue has accepted the position of overseer of spinning at the Aetna Mill of the Wright's Health Underwear Co., Cohoes, N. Y. He comes from Mankato, Minn.

William J. Crossley, overseer of dyeing at the Middlesex Company, Lowell, Mass., has severed his connection with that company.

P. T. Donahue has accepted the position of overseer of finishing at the Philadelphia Felt Co., Frankford, Philadelphia, Pa. He was formerly employed at the Henry F. Scatchard Mfg. Co., Norristown, Pa.

Harry Haigh, overseer of dyeing at the American Felt Co., Franklin, Mass., has resigned to accept a similar position with the A. W. Emmons Co., South Framingham, Mass.

Everett N. Putnam has been appointed overseer of dyeing at the American Felt Co.'s mill at Franklin, Mass., succeeding Harry Haigh.

John A. Hawkinson, who for the past year has been employed as overseer of burling and sewing at the Franklin Mills of the M. T. Stevens & Sons Co., Franklin, N. H., has resigned.

E. D. Alexander has accepted the position of overseer of spinning at the Home Cotton Mills, St. Louis, Mo. He was formerly employed at the Aurora Mills, Burlington, N. C.

M. T. Sanford has accepted the position of overseer of spinning at the Hannah Pickett Mill, Rockingham, N. C. He was formerly employed as overseer of carding and spinning at the Holt-Granite Mills, Nos. 2 anl 3, Haw River, N. C.

J. E. Hornbuckle has accepted the position of overseer of weaving at the Oneida Mills, Graham, N. C. He formerly worked at the Huss Manufacturing Co., Bessemer City, N. C.

J. W. Small has accepted the position of overseer of weaving at the Lakeside Mill, Burlington, N. C. He comes from Haw River, N. C.

John Tate has accepted the position of overseer of spinning at the Elmira Mills, Burlington, N. C.

R. A. Hughes has accepted the position of overseer of spooling and warping at the Aurora Mills, Burlington, N. C. He comes from Greensboro, N. C

W. F. O'Pry has accepted the position of overseer of spinning at the Schoolfield Mills, Danville, Va. He comes from Greenville, S. C.

J. J. Huffstickler has been promoted from overseer of spinning to superintendent of the Wadesboro Cotton Mill, Wadesboro, N. C., succeeding J. F. Cunningham.

C. C. Miller has accepted the position of overseer of dyeing at the Highland Park Mill, Rock Hill, S. C., succeeding Gustave Winecoff. Mr. Miller comes from Roanoke Rapids, N. C.

D. Reid has accepted the position of overseer of spinning at the Alexander City Cotton Mills, Alexander City, Ala., succeeding T. H. Cromer, who will now devote all of his time to the weaving. Mr. Reid comes from Langdale, Ala.

E. A. Hall has been appointed superintendent of the York Cotton Mill, Yorkville, S. C. He was formerly employed at the Patterson Manufacturing Co., China Grove, N. C., in a similar position.

L. A. Huggins has been promoted from second hand in the spinning room to overseer of the night spinning at the Majestic Mill, Belmont, N. C., succeeding G. H. Grason.

C. Morrison has been appointed superintendent of the Ridgeview Hosiery Mill Co., Newton, N. C. He comes from Albermarle, N. C.

W. S. Wells, general manager of the D. G. Dery Silk Mill, Catasauqua, Pa., and other mills connected with this company, has severed his connection with that company.

J. Colby Lewis, Jr. has accepted the position of overseer of carding at the Greylock Cotton Mills, North Pownal, Vt. He was formerly employed at the Champlain Silk Mills, Brooklyn, N. Y.

Dexter Stevens, superintendent of the yarn department at the Lancaster Mill, Clinton, Mass., has tendered his resignation to accept a position as manager of a large cotton mill in Philadelphia.

Louis Provo, overseer of weaving at the Mystic Woolen Co., Hope Valley, R. I., has resigned. He is succeeded by William Prince, who comes from Hallville, Conn.

Benjamin Fahey has been promoted to the position of superintendent of the Globe Yarn Mill, Fall River, Mass. He was formerly employed as boss carder at this mill and succeeds Anthony Moore.

Frank Pingree has been appointed overseer of spinning at the Brown Mill, Dover, Me. He was formerly employed as second hand with Mayo & Sons, Foxcroft, Me.

Samuel McKenzie has accepted the position as overseer of carding at the Monarch Knitting Co., Ltd., Dunnville, Ont., Canada. He was formerly employed with Yund, Kennedy & Yund, Amsterdam, N. Y.

J. Clifford Woodhull, selling agent for the American Woolen Co., and in their employ for the past twenty-four years, has severed his connection with that company. He is succeeded by John W. Burrows. Francis R. Masters, associate selling agent for the American Woolen Co., has resigned also and is succeeded by Martin G. Langenau.

L. N. Dillon, designer at the American Mills Co., Rockville, Conn., has resigned to accept the position of superintendent for the Saxony Mill of the James J. Regan Manufacturing Co., Rockville, Conn.

Charles Andrews, overseer of carding at the Locustville Woolen Co., Hope Valley, R. I., has severed his connection with that company and is succeeded by Patrick Doherty. Mr. Doherty formerly held the position of boss carder for Taylor & Co.

Richard Olney has been appointed a trustee of the estate of the late H. N. Slater, Webster, Mass., also Thomas L. Livermore and Jacob F. Brown, all of Boston.

William Tedd has accepted the position of overseer of weaving at the Ashtabula Worsted Mills, Ashtabula, O. He was formerly employed at the Uxbridge Worsted Co., Uxbridge, Mass.

William Ey has accepted the position of overseer of weaving at the Pondicherry Co., Bridgton, Me. He was formerly employed at the Saxtons River Woolen Co., Saxtons River, Vt.

T. J. Nevins has accepted the position of overseer of weaving at the Cleveland Woolen Mills Co., Dresden, O. He was formerly employed at the Brampton Woolen Co., Penacook, N. H.

James H. Redmond has been appointed superintendent of the Ashtabula Worsted Mills Co., Ashtabula, O. He was formerly employed as superintendent of the Faulkner Manufacturing Co., North Billerica, Mass.

Frank Singleton has accepted the position of designer at the Uxbridge Worsted Co., Uxbridge, Mass. He was formerly employed at the Huntington Manufacturing Co., Huntington, Mass.

Walter A. Scott has accepted the position of overseer of finishing at the Harris, Emery Co., Penacook, N. H. He comes from the Burlington Mills, Winooski, Vt.

Thomas Simons has accepted the position of overseer of finishing at the Rockville Worsted Co., Rockville, Conn. He was formerly employed at the Warren Woolen Co., Stafford Springs, Conn.

Henry H. Veitch has accepted the position of overseer of weaving at the Woodside Mills, Northboro, Mass. He was formerly employed at the Pondicherry Co., Bridgton, Me.

George W. Engel has been appointed superintendent of the Faulkner Manufacturing Co., North Billerica, Mass. He was formerly employed at the Hewson Pure Wool Textiles, Ltd., Amherst, N. S., Canada.

Trubee Burrow has been appointed overseer of dyeing at the Pawtucket Hosiery Co., Pawtucket, R. I. He comes from Providence, R. I.

James P. Ryan, overseer of finishing at the Holden, Leonard Co., Bennington, Vt., has severed his connection with that company.

Joseph H. Taylor, overseer of spinning at the Brampton Woolen Co., Penacook, N. H., has severed his connection with that company.

James Bounds, second hand in the weaving department at the Oakland Manufacturing Co., Reisterstown, Md., has been promoted to the position of overseer to succeed S. F. Ziegenfus.

Karl Werfel, overseer of knitting at the Star Knitting Co., Toronto, Ont., Canada, has severed his connection with that company.

David Rennie has accepted the position of overseer of dressing at the Ashtabula Worsted Mills Co., Ashtabula, O. He was formerly employed for S. Slater & Sons, Webster, Mass.

Rudolph Mueller has accepted the position of overseer of finishing at the Ashtabula Worsted Mills, Ashtabula, O. He comes from Milwaukee, Wis.

Charles Garnett has accepted the position of section-hand in the spinning department at the Cleveland Worsted Mills Co., Cleveland, O. He was formerly employed at the Waterhouse & Howard Worsted Mill, North Adams, Mass.

Charles S. Knight has accepted the position of overseer of carding at the Philadelphia Felt Co., Frankford, Philadelphia, Pa. He was formerly employed at the Oakland Manufacturing Co., Reisterstown, Md.

Ben Holden has accepted the position of overseer of carding and spinning at the Versailles Sanitary Fibre Mills, Versailles, Conn. He was formerly employed at Putnam, Conn.

Arthur M. Ruffelt has accepted the position of overseer of finishing at the Malden Knitting Co., Malden, Mass. He was formerly employed at the Everett Knitting Works, Lebanon, N. H.

Thomas F. Andrews has been appointed overseer of carding at the American Felt Co., Hyde Park, Mass. He comes from Webster, Mass.

Weston Eayres, formerly overseer of dyeing at the Waterhouse & Howard Mill, North Adams, Mass., has resigned to accept a similar position with the French River Textile Co., Mechanicsville, Conn.

William E. Keach, who has been connected with the Grant Yarn Co., and the Fitchburg Yarn Co., at Fitchburg, Mass., for a number of years as manager and superintendent, has severed his connection with that company.

Richard J. Stritch, for the past nine years second hand in the card room at the George H. Gilbert Manufacturing Co., Gilbertville, Mass., has accepted a similar position with the Northern Ohio Blanket Mills, Cleveland, O.

John Monahan has been appointed overseer of spinning at the Brampton Woolen Co., Penacook, N. H., succeeding Joseph H. Taylor.

James Ducharme has accepted the position of overseer of finishing for the Richardson, Foster Co., Central Falls, R. I. He was formerly employed with D. Goff & Sons, Pawtucket, R. I.

G. A. Lay has accepted the position of overseer of spinning at the Capitola Manufacturing Co., Marshall, N. C. He was formerly employed at the Avon Mill, Gastonia, N. C.

William Miller has accepted the position of overseer of spinning and assistant superintendent at the Maple Mills, Dillon, S. C. He was formerly employed as overseer of carding at the Hartsville Mills, Hartsville, S. C.

J. R. Turner has accepted the position of overseer of spinning at the Wylie Mill, Chester, S. C., succeeding W. H. Sanders.

J. H. Moore has accepted the position of overseer of spinning at the Prendergast Cotton Mills, Prendergast, Tenn. He comes from Kings Mountain, N. C.

James A. Fowler has accepted the position of overseer of weaving at the Lauerdale Mill, Meridian, Miss. He formerly held a similar position with the Locke Mill, Concord, N. C.

H. M. Abernathy has accepted the position of overseer of carding and spinning nights at the

Avon Mill, Gastonia, N. C. He comes from Mount Holly, N. C.

J. R. Killian has been appointed superintendent of the Patterson Mills, China Grove, N. C. He was formerly superintendent of the York Cotton Mills, Yorkville, S. C., which position he held for several years.

W. J. Tallant has accepted the position of overseer of carding at the Holston Manufacturing Co., Lenoir City, Tenn. He was formerly employed as second hand in the card room at the Anchoe Duck Mills, Rome, Ga.

G. W. Brigman, formerly overseer of carding and spinning at the Holt-Williamson Manufacturing Co., Fayetteville, N. C., has been appointed superintendent of the Ida Mill, Laurel Hill, N. C.

M. L. Taylor, overseer of carding at the Fountain Cotton Mills, Tarboro, N. C., has been appointed overseer of spinning also.

Andrew Cohoon, for the past nine years overseer of bleaching at the Lewiston Bleach & Dye Works, Lewiston, Me., has resigned to accept a position at Wappinger's Falls, N. Y.

George H. Booth, for the past two and one-half years agent of the Booth Manufacturing Co., New Bedford, Mass., has severed his connection with that company. Previous to accepting the position of agent of this company he was employed at the Gosnold Mill, New Bedford, for over eight years.

J. W. Sands, overseer of finishing at the Oakland Manufacturing Co., Reisterstown, Md., has severed his connection with that company.

E. L. Gobel has accepted the position of overseer of carding at the Hamilton-Carhartt Mill, Rock Hill S. C. He was formerly employed at the Bellwill Mill, Wilmington, N. C.

R F. Coble has been appointed superintendent of the Osage Mills, Bessemer City, N. C.

J. A. Going has accepted the position of overseer of spinning at the Hoskins Mill, Charlotte, N. C. He was formerly employed at the Drayton Mill, Spartanburg, S. C.

David Gravel, of the cotton department at the Arlington Mills, Lawrence, Mass., has accepted the position of overseer of finishing at the Standard Processing Co., Chattanooga, Tenn. Mr. Gravel made many friends while at the Arlington Mill by his manner and upright character. The help presented him with a traveling bag, box of cigars and $30 in gold, and wished him success in his new position in the South.

Alphonso Ross has accepted the position of overseer of carding at the G. H. Tilton & Son's Mill, Savannah, Ga. He comes from Providence, R. I.

Homer E. Taplin, overseer of weaving at the Musketaquid Mill, U. S. Worsted Co., Lowell, Mass., has severed his connection with that company. He intends to take up farming in Newport, N. H., in the near future.

Harvey A. Durnham has been appointed superintendent of the Dundee Mill, Hookset, N. H. He was at one time employed as superintendent of the Eclipse and Beaver Mill, now known as the Hoosac Cotton Co., North Adams, Mass.

Robert Hall, overseer of weaving at the Waucantuck Mill, Uxbridge, Mass., has severed his connection with that company to accept a similar position with the Aetna Mill, Watertown, Mass.

At the annual meeting of the Silk Association of America officers were elected as follows: President, Charles Cheney; vice-presidents, H. Schniewind, Jr., Louis Stearns, M. W. Dippel; managers, Riochiro Arai, Theodore Boettger, Edward E. Bradley, Conrad Buhler, Charles Cheney, B. Edmund David, M. W. Dippel, Frank W. Eaton, Isidor Hellman, Fritz Hill, August Hunziker, Henry D. Klots, Samuel McCollom, Charles E. Lotte, Hussel Murray, Jerome C. Read, E. C. Kossmassler, H. Schniewind, Jr., Robert Schwarzenbach, William Skinner, Henry J. Soria, Louis Stearns, Emil J. Stehli, Benjamin B. Tilt and A. D Walker; Ramsay Peugnet was reelected secretary and treasurer.

H. A. Jolitz has been appointed superintendent of the Utica Willowvale Bleaching Co. of Chadwick, N. Y. He was formerly employed at the Bellman Brook Bleachery, Fairview, N. J.

DEATHS.

Dr. Gustav Von Bruening, general director of the Farbwerke, formerly Meister, Lucius & Bruening, Hoechst on the Main, Germany, died on February 8. Dr. Von Bruening was one of the prominent scientists and chemical engineers in Germany and the great establishment, which he directed, has been a leader in the development of the chemical and dye stuff industry. Its products in America are sold by the Farbwerke-Hoechst Co., H. A. Metz, president.

Walter D. Brigham, formerly assistant superintendent of the manufacturing department of the Willimantic Linen Co., Willimantic, Conn., died at his home in Macon, Ga., of Bright's disease. In 1880 Mr. Brigham came to Willimantic and accepted the position of assistant to John Scott, then superintendent of the thread mill. When the American Thread Co. took over the Willimantic Linen Co.'s plant. Mr. Brigham resigned and engaged in other business. He is survived by a wife and three daughters.

John T. Fales died at the Rhode Island Hospital, Providence, R. I., of pneumonia, at the age of 71 years. Several years ago he entered the mill business at East Amherst, Mass., and later was appointed superintendent of the Narragansett Web Co., Newport, R. I., afterwards moving to Providence, where he entered into the insurance business. He is survived by a widow.

Charles H. Richardson, formerly agent of the Lancaster Mill, Clinton, Mass., died at his home in Lowell, Mass., at the age of 70 years.

John Foster, a member of the firm of Firth & Foster, Philadelphia, Pa., dyers and finishers of woolen goods, died at his home in Philadelphia. He had been in ill health for the past few years with kidney trouble. Mr. Foster was born in

Halifax, Yorkshire, England, where he learned the dyeing business. When twenty-five years of age, he came to this country. Early in the seventies the firm of Firth & Foster was organized. He was a member of the Masonic Fraternity Lodge, Union League, and the Columbia Club.

M. P. Hanley, agent and manager of the Camden Woolen Co., Camden, Me., died March 1 in a Boston hospital at the age of 60 years. Mr. Hanley was formerly a resident of Stafford Springs, Conn., having been engaged for a number of years in the Hope Mill of that town as superintendent. Besides a wife he is survived by two sons, two daughters, three brothers and two sisters.

Benjamin Lucas of the firm of B. Lucas & Co., Poquetanuck, Conn., who were manufacturers of dress goods until the fire recently at their mill, died while on a cruise in Southern waters for the benefit of his health, the telegram having been received from Barbadoes, West Indies, announcing his death. He is survived by a wife a brother and a sister. Mr. Lucas started on a Southern cruise February 8th in the hope of regaining his health.

Andrew J. Gardner, for a number of years manager of the Danielson Cotton Co., Danielson, Conn., died at Westfield, N. Y., at the age of 84 years. He is survived by a widow and three sons.

Edward H. Sturtevant, treasurer and secretary of the Hemphill Mfg. Co., builders of the Banner knitting machines, whose factory is at Pawtucket, R. I., died at his home in Franklin, N. H., at the age of 67 years. Mr. Sturtevant was one of the prominent business men of New Hampshire, and had been closely identified with manufacturing enterprises of the state, particularly the knitting industry. He was one of the large owners in the Franklin Needle Co., president of the Franklin Falls Co. and the Franklin Light & Power Co., and financially interested in other manufacturing enterprises. He had been the mayor of Franklin, N. H., and had represented his home city in the state legislature. Mr. Sturtevant was a fine type of the New England manufacturer and business man, upright and straightforward in his methods, shrewd and discerning in his business judgment. His wife and two daughters survive him.

Thomas D. White, president and founder of the Nottingham Knitting Co., Oswego, N. Y., died at his home in that city. He was born in Nottingham, England, in 1835 and came to this country when he was 28 years of age, entering the employ of the Swits Conde Knitting Co. as foreman of the knitting department. In 1892 Mr. White organized the Nottingham Knitting Co., which has grown steadily and is now considered one of the leading companies in that section manufacturing knit goods. He is survived by a widow, five sons and one daughter.

S. K. Smith, a well known silk manufacturer, died at his home in Pittsfield, Mass., at the age of 63 years after an illness of several months. He was born in Brooklyn, N. Y., and in 1866 entered the employ of E. R. Ross & Co., Rockville, Conn. Two years later he left to accept a position with Belding Bros. and was one of the first overseers in the manufacture of silk in Rockville. In 1874 Mr. Smith installed the first silk machinery in Pittsfield, Mass., and two years later formed the partnership known as the Belding, Smith & Co. A widow and several children survive him.

Daniel Neal, a retired woolen manufacturer and veteran of the civil war, died at his home in Springfield, Mass. He was born in Bradford, England, March 15, 1835. In 1854 he came to this country and settled in Adams, Mass. After the war he took up his residence at Glastonbury, Conn. He is survived by a widow and two sons.

Clinton Morrison, president of the Northwestern Knitting Co., Minneapolis, Minn., died at his home in that city after an illness which confined him to his home for about ten days, although his health for several years had been failing. Mr. Morrison was born in Livermore, Me., Jan. 21, 1842. At the time of his death he was president of the North Star Woolen Mill, Holding Co., director of the Twin City Rapid Transit Co., besides being a stockholder in banking and business corporations. He was also a leading member of the Minneapolis Club. One son and a daughter survive him.

William S. Brice, superintendent of the Southern division of the Amoskeag Manufacturing Co., Manchester, N. H., died at his home in that city. Mr. Brice had not been feeling as well as usual and left the mill for his home. On arriving there he was stricken with a shock to which he succumbed almost immediately. He was 55 years of age and is survived by a wife, one daughter and two sons.

John H. Lightbrown, overseer of spinning at the Hargraves Mill No. 2, Fall River, Mass., died suddenly of heart disease while at his work. He was about the department as usual in the morning, but towards the middle of the forenoon complained of a weakness. The employes were startled to see him sink to the floor and although everything possible was done to relieve him, he passed away. Mr. Lightbrown was 38 years of age and had been employed in this mill for a number of years.

Walter J. Roberts, general manager of the Reliable Knitting Co., Great Barrington, Mass., died at his home in that city at the age of 48 years, after a few weeks' illness. He was born in Nottingham, Eng., coming to this country when a young man and entering the employ of a knitting mill at Canaan, Conn., which concern later moved to Great Barrington. A widow and six children survive him.

James E. McCreery, for a number of years superintendent of the Granite Mill, Fall River, Mass., died at his home in that city after a lingering illness at the age of 82 years. He was born in Stockport, Eng., in 1831. When a young man he came to this country and began work at the Granite Mill, gradually working his way up to the position of superintendent. He had charge of this mill at the time of the Granite Mill fire in that city. Mr. McCreery retired in 1895 and his son, Thomas H. McCreery, succeeded him. He was a member of a number of lodges. Four children survive him.

Mill News

Those interested in receiving early and more complete investigated information of projected new mills, enlargements, improvements, fires, facts and gossip of the trade are referred to the TEXTILE ADVANCE NEWS, issued weekly by the publishers of the TEXTILE WORLD RECORD, at $15.00 per year. Communications for this department are invited. There is no charge made for printing notices of new mills, enlargements, improvements, etc.

COTTON.

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New Mills.

*Georgia, Chickamauga. The cotton mill to be built for the Crystal Springs Bleaching Company is under construction and according to plans will be completed about September 1. It is to be equipped with 20,000 spindles and 700 looms to make bag goods which will be converted by the Crystal Springs Bleaching Company. The new mill will be of the most modern type of construction, with steam and electric power, and will give employment to about 300 hands. D. A. Jewell is president, treasurer, and buyer, A. S. Bowen, vice-president, and A. E. Yates, superintendent.

*New Jersey, Newport. Construction is progressing on the mill for the Bell Cotton Fabric Company, organized several months ago to manufacture Turkish towels, Terry cloth, and damasks, and it is expected that manufacturing will be started by the company within a short time. March 15 was the date originally set for the beginning of manufacturing. Equipment will include 40 looms, bleaching department, steam and electric power equipment. The capital stock of the company is $50,000. Robert E. Bell is president and buyer.

*North Carolina, Kannapolis. The Cabarrus Cotton Mills of Concord will try to complete the new 15,000 to 20,000 spindle mill to be erected in Kannapolis by the end of the summer. The plans are practically finished and construction work will be started at as early a date as possible.

*North Carolina, Lexington. The Erlinger Cotton Mills have awarded the contract to the Gallivan Building Company of Greenville, S. C., for the building of a mill 668 by 132 ft. of brick construction, costing about $125,000, and tenements costing about $50,000. It has been noted that 25,600 spindles and 680 looms will be installed for manufacturing cloth for B. V. D. underwear made by the Erlanger Bros. of New York, who will build the mill and then transfer it to a new corporation to be formed under the name of the Erlanger Cotton Mills with a capital of probably $500,000. J. E. Sirrine is the architect-engineer in charge.

*North Carolina, Maysville. A site has been purchased by the new Maysville Cotton Company for its proposed factory. According to plans, a 5,000-spindle mill to make 8s to 20s cotton yarns will be built and equipped. This company was incorporated last December with capital stock of $100,000 and organized with E. L. Mattocks, president, R. L. Jenkins, treasurer, and J. C. Bauman, managing director.

Enlargements and Improvements.

Alabama, Selma. Several car loads of new machinery have arrived and will be installed in the plant of the Selma Mfg. Company, replacing old machinery. This plant manufactures bag goods. J. F. Ames of Cleveland, O., is president.

Alabama, Speigner Station. In about two months the State's hydro electric plant will be in operation and the Alabama Cotton Mills, owned by the State and operated by convicts, will be running with electric power.

Canada, Montreal. It is expected the addition to the St. Anne's branch of the Dominion Textile Company will be completed by May 1. Equipment has been ordered which will increase the output by about 50,000 pounds per week of duck, seamless bags, bag cloths, and cotton twines.

Canada, Ontario, Guelph. The Guelph Cotton Mills, Ltd., will build an addition during the spring. This company manufactures cotton weaving and carpet yarns, 2s to 14s, on 1,000 spindles.

Connecticut, Danielson. It is reported that the Quinebaug Co. will install 60 new spinning frames to replace old equipment. Some of the looms have been put on fancy goods.

*Connecticut, Killingly. Contracts have been placed by the Killingly Mfg. Company for the first of the new machinery and this equipment will be installed during the next 60 days. Tire fabrics will be made for the Goodyear Tire & Rubber Company of Akron, O., which controls the Killingly Mfg. Company. A brick addition is to be built at the southern end of the present plant for use as a weave shed but no definite arrangements have been made as yet for this enlargement.

*Connecticut, Pine Meadow. The addition to the weave shed of D. B. Smith & Son, manufacturers of felt and cotton duck, will be of concrete construction, 30 by 40 ft., 1-story high.

*North Carolina, Kinston. Contracts have been placed by the Caswell Cotton Mills, Inc., for 5,400 spindles and preparatory machinery. This will double the present equipment. Early in April they will begin to build a 100-foot extension to the mill, 2 stories high, which will take care of about 14,000 spindles. According to plans the addition will be completed and the new machinery set up ready for operation by September 1. Most of the building materials have been purchased and everything is in readiness for the work to be pushed. There is ample power at present to operate the additional machinery.

North Carolina, Lincolnton. Plans are being made by the Eureka Mfg. Co. to equip a yarn dye-

ing department. A cop machine recently was purchased and will shortly be set up. The Eureka Manufacturing Company makes mule spun waste yarn.

North Carolina, Mt. Holly. The Albion Cotton Mills Company has ordered 2,400 new spindles and the Mt. Holly Cotton Mills Company has ordered 2,000 new spindles. Both concerns will use this new machinery to replace old equipment.

*North Carolina, Salisbury. New twister spindles are being installed in the plant of the Vance Cotton Mills. A small addition was recently completed.

Pennsylvania, Philadelphia. Fred. Pearson & Co., Inc., located at Hancock and Somerset Sts., with a branch mill in Bondsville, Pa., have recently purchased the mill building at Leverington Ave. and Wilde Sts., Manayunk, from the Kerkeslager estate and expect possession on or about June 1. They will remove their present plant containing 45 looms which they operate on plushes, jacquard and plain weaves, to the new location, which will be remodelled to suit their requirements.

Pennsylvania, Philadelphia. The Miller Waste Manfg. Co., who have been located on Mascher St., above York, for some time have leased the large building formerly occupied by the National Hosiery Co. at Sepviva and Hazzard Sts., where they are arranging for the installation of equipment.

Pennsylvania, Philadelphia. For the purpose of making improvements and additions to their plant at Tioga and C Sts., Baxter, Kelley & Faust, Inc. have leased temporary quarters in the Davenport Mills, Mascher and York Sts., in which they have installed a number of looms on which they are making cotton plushes.

Rhode Island, Ashton. An addition is being built to the boiler house of the Ashton Mills, operated by the Lonsdale Company, and a new boiler is to be installed.

Rhode Island, Central Falls. Contract has been awarded by the Waypoyset Manufacturing Company for construction of a new storage building, 1-story high, 80 by 180 ft.

Rhode Island, Hope Valley. An addition, 54 by 54 ft., is to be built to the weaving shed of Joseph J. Taylor & Co., manufacturers of cotton fabrics and yarns. New looms will be installed increasing the number to 84.

South Carolina, Anderson. A 2-story addition 50 by 100 ft. is to be built to the Conneross Yarn Mill. Upon completion this enlargement will be equipped for manufacturing cotton yarns. At present 4 sets of cards and 1,200 mule spindles are operated on linter rope and mop yarn. A. S. Farmer is president, treasurer and buyer.

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Mills Starting Up.

Alabama, Selma. Goodin, Reid & Company of Cincinnati, mill selling agents of cotton goods, have purchased the old Estelle Cotton Mills for $125,000. It is reported they will expend about $75,000 for improvements and start up the plant. The plant was last operated about two years ago under the name of the Valley Creek Mills. There are 10,000 spindles, 144 wide and 176 narrow looms in the plant, suitable for manufacturing convertible goods. H. H. Stewart of the Alabama Cotton Mills at Speigner Station has been engaged as manager.

Georgia, Griffin. The Cherokee Mills have been sold to the Kincaid Mfg. Company of Griffin. The new owners will put the plant in operation as soon as circumstances will permit and also plan the addition of about 5,000 spindles and 200 looms.

Massachusetts, Assonet. The Puritan Mills, products from cotton waste, have resumed manufacturing. Recently the company was reorganized.

*North Carolina, Bladenboro. The Bladenboro Cotton Mills began operations about 30 days ago and are running at about 60 per cent. of capacity. All machines will be running just as soon as suitable labor can be secured. 8,000 spindles for making hosiery yarns have been installed.

South Carolina, Clio. The Octoraro Mills, which have been idle for two or three years are to be started up, according to report. The mill has 4,500 ring spindles on which 2/12s to 2/24s skein yarns were manufactured.

*Tennessee, Prendergast. The new Prendergast Cotton Mills have begun manufacturing single and ply knitting and weaving yarns.

WOOLEN.

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New Mills.

*Pennsylvania, Chester. The new Nelson Spinning Company which is located on the top floor of the Arasapha Mill at 10th and Walnut Sts. is to begin operations next week making wool and merino yarn, 2/5 to 2/25, principally for the knitting trade. Four sets of cards and 6 mules with 2,160 spindles are being installed. W. G. Nelson is president and S. L. Irving, treasurer.

*Wisconsin, Frederic. The Frederic Woolen Mill will begin manufacturing about April 1, with 1 set of cards and 4 looms making flannels, blankets, mackinaws and hosiery yarns. The larger part of the business will be custom work.

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Enlargements and Improvements.

Canada, Ontario, Toronto. The Smith Manufacturing Company Ltd., wool stock and shoddy manufacturers, have moved into their new building on Front St. The old mill has been taken over by the Standard Woolen Mills Company of Toronto.

Canada, Ontario, Toronto. The Standard Woolen Mills Company of Toronto have taken over the mill formerly occupied by the Smith Mfg. Co., Ltd., and are equipping for wool scouring, dyeing and picking. Extensive alterations are being made about the property.

*Connecticut, New Boston. Repairs are being made by the Fabyan Woolen Company of Number 3 mill which was damaged by fire a few days ago.

*Connecticut, Rockville. The James J. Regan Mfg. Company will start up the old Saxony Mill of the Hockanum Company, which they recently purchased, about May 1 with 40 looms. Finishing machinery is to be installed to finish the goods from these looms. The carding and spinning departments of the main mill may be operated overtime to supply yarn for this new department. L. M. Dillon has been engaged as superintendent and designer.

*Connecticut, Thompsonville. The large brick mill under construction for the Hartford Carpet Corp. will be 4 stories high, 300 by 70 ft., and will be used as a storehouse and shipping room.

Maine, Bridgton. Within a short time improvements at the Forest Mills of the American Woolen Company will be completed and the mill will be running to full capacity. Marked improvements have been made, new machinery put in, and in some cases, as in the old dye house, the original building has been entirely replaced by a new one. The lighting and ventilation have been greatly improved.

*Massachusetts, Athol. Manufacturing will be resumed in the plant of the Millers River Mfg. Co. April 1. They are making repairs after the recent fire and intend to put in a washer, a dryer, and 30 new looms. Blankets are manufactured. Eugene C. Gaynor is president, treasurer, and buyer. Tom E. Smith is the superintendent.

*Massachusetts, Mendon. George R. Whiting, proprietor of the Mendon Woolen Mills, destroyed by fire a short time ago, expects to replace the plant and resume manufacturing inside of four months. It has been noted that buildings of practically the same dimensions will be erected. Before the fire, 9 cards, 4 pickers and extensive dyeing and carbonizing departments were operated on shoddy and extracts. Mr. Whiting is interested in a branch mill at Unionville which is being operated night and day.

*Massachusetts, North Chelmsford. Enlargements at the Silesia Worsted Mills of the United States Worsted Company are practically completed. The present spinning rooms will be enlarged by using the additional space on the second and third floors of the new building. Each of the old buildings has been lengthened about 50 ft. and connected at the front end by a building 168 ft. in length, 3 stories high. On the first floor of the building new offices have been inttalled.

*New Hampshire, Claremont. John Roberts now has 6 sets of cards, 1,848 spindles and 21 looms, making wool cheviots and cassimeres. A 3-story mill was recently constructed, giving needed facilities for increases and rearrangement of equipment. Water and electric power is used.

*New Hampshire, Tilton. Six new looms instead of four, as previously reported, have been installed in the plant of the Elm Mills Woolen Company. The plant is running overtime.
Woolen Company.

New York, Falconer. James Simpson & Company have purchased the plant occupied by them. About a year ago this concern leased the Lynndon Worsted Company's plant. According to report the plant which contains 14 spinning frames, 7 twisters, 3 cards, and 3 combs, making worsted yarns up to 2/36s, will now be improved and enlarged.

*Oregon, Portland. The mill building being erected for the Portland Woolen Mills will be completed about April 1. This building will be of brick and concrete construction, 80 by 200 ft., with saw tooth roof. Blankets, auto robes, flannels, carriage cloths and mackinaws are manufactured on present equipment of 6 sets and 60 broad looms. W. P. Olds is president, and E. L. Thompson is treasurer, manager and buyer.

*Pennsylvania, Allentown. The addition under construction for the Winona Silk Company at Mountainville is to be completed about May 1 and will be equipped with 30 new broad silk looms before the first of June. They now have 30 looms on broad silks. M. J. Kauffman is president, and J. J. Weaver, treasurer, superintendent, and buyer. Electric power is used.

Pennsylvania, Lenni Mills. A contract has been awarded by the Yorkshire Worsted Mills, Miller & Pleet, proprietors, for the tearing down of the frame dye house and other frame buildings adjoining the main mill, and erection of a new brick addition, 52 by 100 ft. Construction work will be started in about two weeks. This will make the mill 52 by 242 ft. The new space will be equipped for weaving and finishing men's wear worsteds. A. Pleet is the buyer.

Pennsylvania, Philadelphia. The National Waste Company, manufacturers of carpet and waste yarns with 9 sets, 1,440 mule spindles, also wiping and packing waste, have purchased from the Collins & Aikman Co. the four-story factory building and dye house on Nixon St., south of Leverington Ave., Manayunk, which they will use for warehousing purposes. The property occupies a lot 91 by 164 ft. and is assessed at $10,000 and is subject to a perpetual water rent of $392 yearly.

Pennsylvania, Philadelphia. The Saxonia Dress Goods Mills, located at Howard and Palmer Sts., where they are manufacturing fancy dress goods and woolens on 150 looms, have recently contracted for the erection of a large and new plant on property acquired by them at Allegheny Ave. and C St. The operation will consist of three buildings to be erected on a lot 500 by 195 ft. The main mill will be of slow burning construction four stories high and 180 by 58 ft.; a one-story warehouse building 152 by 162 ft., and a one-story power house 40 by 64 ft., equipped for steam and electric drive. The company will have its own terminal from the railroad. The entire operation is to be erected after plans drawn by W. E. S. Dyer, architectural and construction engineer, Philadelphia, who is giving the erection of the plant his personal attention and supervision.

Pennsylvania, Philadelphia. The Superior Textile Mills, Inc., one of the new companies which started up here about six months ago for the manufacture of dress goods, men's wear, etc., are about to install 10 new broad looms on which

they will manufacture astrakans, in addition to their other lines. They are very busy.

*Virginia, Bedford City. Work has been completed on the addition to the plant of the Bedford Mills Company and machinery is now being installed. It was reported in January that 4 more sets of cards and 4 mules would be added. Uniform cloths and other woolen goods are manufactured.

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Mills Starting Up.

Maine, Dexter. The Greenwood Woolen Company will start up its mill in a few days. The plant has been shut down for the past few weeks.

*Massachusetts, Boston. The Middlebrook Wool Combing Co., Inc., a new concern organized a few months ago with capital stock of $250,000 to locate a commission wool combing plant at 310 Border St., East Boston, is beginning operations. About two-thirds of the machinery equipment, which will include 12 cards and 10 combs, has been installed. J. A. Middlebrook is the president and manager and J. W. Coggeshall is treasurer.

*Massachusetts, Hudson. The Wottoquottoc Worsted Company has begun operations and in a few days the new plant will be running in full, making 16s to 50s worsted yarns, single and ply, on 4,000 spindles. The Wottoquottoc Worsted Company was organized several months ago with capital stock of $90,000 by E. P. Larkin, president, and James H. Hancock, treasurer and buyer. They built a mill of cement construction, 300 ft. long by 78 ft. wide, with a power house 73 by 41 ft. Commission work will be done chiefly. J. E. Wood has been engaged as superintendent.

Massachusetts, Webster. The Boston Felt & Rubber Company has begun manufacturing felt boots and shoes in the building formerly occupied by the Webster Felt & Rubber Company. The Boston Felt & Rubber Company was incorporated several months ago with capital stock of $50,000. Charles B. Colley of Boston is treasurer, and Henry C. Richardson is superintendent.

*New Jersey, Gloucester. The Breslin Brothers Company will begin manufacturing in a few days. This company was recently organized with capital stock of $100,000 and took over the plant formerly operated by the Fries-Harley Company. Thomas J. Breslin, who heads the new company, was connected with A. & M. Karagheusian, at Freehold, N. J.

*Pennsylvania, Philadelphia. Confirming a report recently made by us that Bunkin & Howard, who recently purchased at receiver's sale the woolen yarn spinning plant formerly operated by Henry Grant at Howard and Berks Sts., would incorporate and start the plant up at once, a charter has been asked for under the name of the Bunkin & Howard Spinning Co., with the following as incorporators: Paul and Bertha Bunkin, Edward B. and Elmer N. Howard.

KNIT.

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New Mills.

Georgia, Barnesville. The men interested in the Collier Mfg. Company are organizing a new concern to establish a mill here to manufacture light weight underwear, making vests and pants and union suits in plain and tuck stitch. The Collier Mfg. Company makes ladies' high grade knit underwear, selling through Clift & Goodrich, New York. D. C. Collier is the secretary, treasurer and agent.

Massachusetts, Gloucester. The Ipswich Mills have leased a factory building on Vincent St. and will establish a small branch here to do knitting and looping. Manufacturing will start next week with about 100 machines, although the capacity of this branch will depend on the number of hands that can be secured.

Massachusetts, Springfield. R. G. Higgins & Co. are equipping a plant at 22 Salem St. with machinery on which they will manufacture a line of high grade silk knitted neckwear.

*Massachusetts, Waltham. The new knit underwear plant being established here by Edwin Clayton, formerly with the Thomas Dalby Company of Watertown, will begin manufacturing about April 1, making ladies' union suits, vests, pants, and corset covers, on 3 knitting machines and 12 sewing machines. Electric power will be used. The plant will be operated under the name of the Clayton Mfg. Company and Mr. Clayton will be manager and buyer.

Minnesota, St. Paul. E. J. Bailey & Co. are fitting up a plant at 409 E. Maryland St. in which they will manufacture surgical elastic hosiery, knee caps, belts, etc., selling direct.

*Minnesota, St. Paul. The new Capitol Knitting Mills will be a branch of the Capitol Suspender Company and it is understood that a separate company will not be formed. Preparation is being made to manufacture sweaters and sweater coats, and L. D. Horn of the Capitol Suspender Company is purchasing equipment.

*New York, New York City. The Princely Knitted Neckwear Company, the new concern which recently equipped a plant at 433 Broadway for manufacturing men's knitted ties has 10 knitting machines and one sewing machine. William Goldsmith is one of the owners and attends to the buying.

*New York, New York City. The Schwartz Knitting Mills, reported incorporated in February, has secured quarters at 141 W. 36th St., and will manufacture sweater coats, etc. Nathan S. Schwartz, who has been engaged in manufacturing knit goods in Pennsylvania mills, will be manager.

*North Carolina, Albemarle. A location has not been decided upon for the proposed branch of the Lillian Knitting Mills which is to be established in some nearby town. Several places are being considered.

North Carolina, High Point. A new company has been organized to manufacture hosiery under

the name of the Crown Hosiery Mills. The capital stock is $40,000; T. H. Kearns is president; R. R. Ragan, vice-president; G. H. Kearns, secretary and treasurer. A 2-story mill, 100 by 60 ft., of mill construction, will be built and construction contract has been awarded. One hundred knitting machines will be installed. It was noted same time ago that the Messrs. Kearns would organize a new company to manufacture hosiery.

North Carolina, Mebane. It is understood that the Durham Hosiery Mills have acquired the property known as the old Alton factory and will equip it as a branch mill to be known as Durham Hosiery Mill, No. 6. Employment is to be given to several hundred operatives, according to report. No definite date has been set for the opening of No. 6 mill but it will be in full running operation as early as machinery can be installed.

North Carolina, Morganton. David H. Mull, who has been connected with the Drexel Knitting Mills at Drexel, will build a hosiery mill at Morganton and install 50 200-needle machines.

North Carolina, Newton. Machinery equipment is being installed in the building of the Ridgeview Hosiery Mills Company, organized here a short time ago, and the manufacture of ladies' seamless hosiery will be started about April 15. The capital stock is $21,000. L. F. Long is president, J. A. Gaither is treasurer and buyer, and Marion Morrison is the superintendent. Electric power will be used.

*North Carolina, Wendell. A mill is under construction for the Wendell Knitting Mills Company organized several weeks ago with capital stock of $20,000. R. B. Whitley, owner of the Whitley Mfg. Company, heads the new concern.

*Oklahoma, Lawton. H. E. Diehl, 104 A Ave., with Louis Mendlick and J. J. Folk are proceeding with the organization of the Lawton Knitting Mill Co. A building has been secured and a company will be organized with $25,000 capital. The city of Lawton has given a cash bonus.

*Pennsylvania, Bowmansville. A branch plant has been started here by the Conestoga Hosiery Company of Brownstown. Forty knitters are being operated on 144-needle half hose, using 10s, 11s and 40s yarns. A. V. Walter of Brownstown is president and buyer of the Conestoga Hosiery Company. W. E. Snader is superintendent.

Pennsylvania, Harrisburg. J. C. Ewing, formerly of New Cumberland, is arranging for the starting up of a plant on children's union suits, fleece lined, in this city. Four knitters have already been ordered.

Pennsylvania, Hawley. Kaidy Brothers have leased a building on Church St. and will install 6 knitting machines for manufacturing fancy knit scarfs and shawls. Operations will be started in a few days.

Pennsylvania, Lehighton. I. Zimmerman is equipping a plant on North 6th St., with 6 knitters and 4 sewing machines on which he will manufacture ladies' shaped vests using 1/24 carded yarns.

Pennsylvania, Philadelphia. Harry Elwell has leased the first floor in the building at 1543 Ruan St., Frankford, in which he is installing 8 knitting machines on which he will manufacture a line of high grade silk neckwear, operating as a branch of a mill located in Brooklyn, N. Y.

Pennsylvania, Philadelphia. The Alland Knitting Co., John M. Anderson and A. E. Allison proprietors, have leased a portion of the building at 1427 Catharine St., and are installing a number of knitting machines on which they will manufacture a line of infants' and children's hosiery.

Pennsylvania, Philadelphia. Matlack & Co., with J. C. Matlack as superintendent, have started up 1 winder, 3 sewing machines and 14 loopers on looping, welting and back-winding hosiery for the trade, at 2420 Waterloo St. It is probable that knitting machines will be installed at a later date for the manufacture of a line of seamless hosiery.

Pennsylvania, Pottsville. Jacob Boltz has recently equipped a plant in which he is manufacturing women's ribbed underwear on 6 knitters and 4 sewing machines, using electric power and buying 22s to 26s combed peeler yarns.

*Pennsylvania, Virginsville. Charles A. Wanner of Fleetwood is establishing a branch hosiery mill here to make 144-needle men's seamless hosiery and expects to begin manufacturing next week. This is a branch of the hosiery mill at Fleetwood.

*Tennessee, Lawrenceburg. Some machinery is to be brought here at once by the May Hosiery Mills of Nashville and as fast as operatives can be instructed, additional machinery will be brought until 50 hands are given employment. The finishing will be done at Nashville. As noted in an earlier report of this project, temporary quarters will be occupied at first and if conditions are mutually satisfactory, a mill 50 by 125 ft. will be built by business men and presented to the May Hosiery Mills when $40,000 has been paid out in wages.

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Enlargements and Improvements.

*Connecticut, Winsted. The addition for which construction contract was recently awarded by the Winsted Hosiery Company will be 4 stories high, 32 by 64 ft. This does not increase the production as it is to be used simply for storage and shipping room.

*Georgia, Columbus. The Collier Mfg. Company will install additional khitting, finishing and bleaching machinery and in connection with this increase will construct a new 2-story building, 50 by 150 ft. Ladies' knit underwear is manufactured. D. C. Collier is the secretary, treasurer, and buyer. The men interested in this concern are organizing a new company to manufacture light weight underwear, as noted a week ago, and this increased equipment is probably for the new lines.

Georgia, Savannah. The branch mill of G. H. Tilton & Son, Tilton, N. H., which employs negro labor, is to be enlarged. About 200 colored women are employed in the knitting department and when the additional machinery is installed, about 400 colored women will be at work there.

Illinois, Belleville. The capital stock of the Belleville Hosiery Mills has been increased from $50,000 to $75,000. Additions are constantly being made and last fall a bleaching department was added.

Illinois, Chicago. The Royal Knitting Mills, Herman H. Newberger, have bought the equipment of the Winchester Knitting Mills, 422 South Dearborn St. This is the third factory the Royal Knitting Mills have purchased this year. The other two are the Royal Knitting Works and Theo. Fettig, both of Chicago. They now have 62 power flat machines, 10 circular machines, and 54 sewing machines, making sweater coats. The plant is located at the southwest corner of Centre Ave. and Van Buren St.

*Illinois, Chicago. The Lorenz Knit Goods Mfg. Company is erecting a 4-story addition to its plant at 1754 Belmont Ave. Recently the capital stock was increased from $125,000 to $200,000

*Illinois, Rockford. Good progress is being made on the new 10-story concrete factory building for the B. Z. B. Knitting Company. It will be occupied mostly by the B. Z. B. Knitting Company as manufacturers of Rockford fashioned hosiery. No spinning nor handling of raw material will be done. The capital stock of the B. Z. B. Knitting Co. is $300,000 and 200 knitting machines are operated at present. Wm. H. Ziock is president; Wait Talcott, treasurer, and Frank R. Brown, secretary.

*Indiana, Fort Wayne. A machinist has arrived from Germany to set up the new full fashion knitting machines imported for the new $20,000 addition to the plant of Thieme Bros. Company. There will be 18 of these machines in all installed in the addition.

*New Hampshire, Laconia. Twenty new knitting machines are being installed in the plant of the Pitman Mfg. Company. An addition has been erected for office purposes.

Michigan, Grand Rapids. Six additional knitting machines and several sewing machines are to be installed in the plant of the Swiss-American Knitting Mills. A. E. Clark is manager and buyer. This new machinery will be used to manufacture a new patented union suit.

Michigan, Grand Rapids. Larger quarters in the Raniville Bldg. have been secured by the Sanitary Knitting Company, manufacturers of special order underwear. Six new sewing machines have been installed and new cutters will be added. No knitting is done, the web being purchased.

New Jersey, Beverly. The Beverly Underwear Company is building an addition which will largely increase the floor space in the finishing department, the bleaching department and the storage space. Increase in equipment will follow a rearrangement which will be about double their capacity. Women's and children's ribbed underwear is manufactured.

New Jersey, Vineland. John Karl, operating on men's and women's seamless hosiery 160 to 240-needle goods, in cotton, lisle, mercerized and silk, has increased his equipment to 130 knitters, 40 ribbers and 20 loopers, the production being dyed and finished elsewhere and sold both to jobbers and retailers. The plant is fully employed with a large amount of business on hand.

New Jersey, Vineland. Thomas Breaithwaite, who has been operating 16 flat knitters on woolen gloves, is installing 12 knitters, 2 loopers, and 2 sewing machines on which he will manufacture 200-needle men's and women's seamless cotton and mercerized hosiery. He is using 3/15s and 3/16s worsted and 18s and 40s cotton and mercerized yarns. He is operating under the name of the Vineland Glove and Hosiery Factory.

New York, Brooklyn. Larger quarters at 95-97 McKibben St. have been secured by the European Knitting Mills, Katz & Albert, proprietors. This new space will be occupied March 1. The old address is 1056 Myrtle Ave. Ladies' sweaters and bathing suits are manufactured on 9 knitting and 6 sewing machines and it is probable that a small increase will be made. Jacob L. Katz is buyer.

New York, Brooklyn. The Mace Manufacturing Co., 908 Broadway, have increased their equipment by an installation of 10 new knitting machines. They manufacture high grade silk knitted neckwear.

*New York, Clinton. Six knitting frames and 5 sewing machines have been installed in the addition to the plant of the Clinton Knitting Company recently completed. Sweater coats and similar goods are manufactured.

*New York, Fonda. The enlargements to the plant of the Fonda Glove Lining Company, for which contracts were recently let, comprise an addition to the dry room, 20 by 40 ft., and an addition to the dye house, 34 by 65 ft. Constructive work has been started. Astrakhans, stockinet, eiderdown, and fancy knit goods are manufactured. George B. Stover is vice-president and general manager.

New York, Highland. The Highland Knitting Mill contemplates making a line of bed-room slippers. The mill is at present operated on sweaters and fancy knit goods. The post office address is Oakes, Ulster County, N. Y.

New York, Utica. The machine shop of the Oneita Knitting Mills, Inc., is to be remodeled and enlarged. Another floor will be built on this department, 68 by 110 ft., at a cost of about $8,000.

North Carolina, Burlington. The Whitehead Hosiery Mills, Inc., will increase their capital stock from $25,000 to $100,000 and build a new 3-story mill, 160 by 50 ft. The present quarters will be discontinued on the completion of the new mill and the equipment will be increased to 200 knitters, 45 ribbers, and 35 loopers. They expect to occupy the new building by August 15. They make 200 and 220-needle half hose selling through E. M. Townsend & Company, New York. J. W. Murray is president, R. H. Whitehead, treasurer and buyer, and V. C. Price, superintendent.

*North Carolina, Durham. Equipment of the new mill to be built by the Durham Hosiery Mills to replace No. 2 Mill, will be 200 knitting machines. The new structure will be 203 ft. long by 100 ft. wide.

New Publications

(Any work noticed under this head can be obtained through the office of this journal.)

The Official American Textile Directory; 1913 edition; compiled by the Textile World Record; 700 pages; 23 textile maps; Lord & Nagle Company, Boston, New York, and Philadelphia, publishers; Office Edition $3.00; Standard Edition $2.00; Vest Pocket Edition, divided into three sections, viz., New England States and Canada, Middle Atlantic States, Southern and Western States, $1.00 for each section.

Nearly three hundred new mills have been started since the 1912 editions of textile directories were published and nearly two hundred concerns have gone out of existence. This taken with the very large percentage of important changes that have been made makes the appearance of this Directory, three months earlier than usual, of great importance to the trade.

The new Directory maintains the standard set by previous editions and in many ways is an improvement over any directory of the textile trade previously compiled. A new style of type has been used in the mill section reports which allows a small reduction in the size of the book, necessarily large, in spite of the addition of much new information.

In compiling a trade directory the two most important matters to be kept in mind are: First, accuracy, and second, simplicity of arrangement or convenience in use. The greatest accuracy is obtained by canvassing the whole industry by representatives and by mail a few weeks before the publication of the directory, verifying and amplifying reports and bringing the information close to the date of publication. This insures the highest degree of accuracy. To do this successfully extended reporting and news-gathering facilities are necessary. The publishers, being also the publishers of the Textile World Record, have the services of an extensive organization in this work, which cannot be equalled by smaller publishers of books of this character.

Simplicity of arrangement is constantly aimed at. Information, when wanted, is wanted immediately and with anything but the most simple arrangement in a book of the extent of a complete textile directory much time is wasted looking for information. This fact is not always given the attention it deserves by most publishers.

Some of the special features of the Official Directory are as follows: A complete directory of textile mills of all classes, with full information, such as name of company or firm, names of officers, character of goods made and machinery equipment.

Copyrighted maps, by which any town referred to in the text can be quickly located on the map. There are twenty-three of these textile maps, which show only the cities and towns where there are textile establishments and junction points. Railroad facilities, distance from other towns, etc., are shown.

A yarn trade index, which gives a classified list of manufacturers of different kinds of yarn who spin it for the market; size of yarns spun and the way it is put up are given.

A classified list of cloth manufacturers, giving the classes of goods manufactured in every mill.

A commission and order section, giving classified lists of establishments doing all sorts of dyeing, bleaching, finishing, mercerizing, etc., on order for manufacturers and converters.

A list of mills with worsted machinery for the convenience of those dealing exclusively with that branch.

In this edition indexes have been printed on different colored paper from the mill reports, enabling quicker reference to the section desired. The running headings at the top of pages have been made to show at a glance the contents of each page.

Other features are an alphabetical index, dealers in raw materials, lists of manufacturers of and dealers in cotton and woolen waste, shoddy and flocks, selling agents and dry goods commission houses, machinery and supply section, and a list of the textile associations in the United States and Canada, with officers, addresses, etc.

The special attention of salesmen is called to the vest pocket edition, divided into three sections: one of the New England States and Canada; one of the Middle Atlantic States; and one of the Southern and Western States. Each of these little directories contains the textile maps for the larger states in that book just as they appear in the large editions of the directory. These little books are six by three inches in size, similar in appearance to a vest pocket memorandum book, and no thicker. The mill reports are in the same complete form as they appear in the large editions and are arranged in the same ready-for-reference way.

The Metric System, by Henry G. Bayer, 232 Greenwich St., New York; 94 pages, 4 by 6 1/2; published by the author. Price $0.85.

This book contains an explanation and defense of the metric system and twenty-six tables giving the British equivalents of metric units and metric equivalents of British units. The explanations are very clear and the tables are conveniently arranged, making the little volume a very useful hand-book for those having occasion to make conversions from one system to the other. The book would have merited nothing but commendation if its contents had been limited to conversion tables and explanations of the metric system, but the author has seen fit to include a defense of that system of weights and measures, in which he repeats errors and fallacies that have been exposed over and over again. He refers twice to the measurement of the arc of the meridian from Dunkirk to Barcelona by French scientists in 1799, but overlooks the fact that one of these scientists discovered an error in his calculations after sending them to the French authorities and neglected to make any correction, thinking the mistake would never be detected. What is probably the most inexcusable error is the claim that

the use of the metric system would work a "tremendous advantage" in the education of children, Alexander Summers being cited as the authority on this point: "Common school arithmetics would be reduced to two-thirds their present size if the metric system were adopted, and two-thirds of a year of every child's life would be saved for useful work." The schedules of study in the schools of New York show that only about six weeks of a child's school life is devoted to the study of arithmetic involving compound numbers, weights and measures, and yet we are told that two-thirds of a year could be saved out of this six weeks.

Mr. Bayer has conjured up a problem involving the reduction of miles, furlongs, rods, yards, feet and inches to inches and compares the resulting calculations with the reduction of kilometers, hectometers, decameters, meters, decimeters, centimeters and millimeters to millimeters. It is difficult to imagine any comparison more unfair. Neither problem would ever arise in the ordinary use of either system. The decimal basis does, of course, facilitate such reductions, but decimals are not confined to the metric system. The British units can be and are divided decimally. If Mr. Bayer desires to make a fair comparison he should go to civil engineering and compare the foot and meter when both are decimally divided. The author gives an imposing list of countries in which "the metric system has been adopted," but fails to state that in not one of them is the metric system exclusively used and in but a few is it the prevailing system. Mr. Bayer says: "Alexander Siemens, president of the Institution of Electrical Engineers, said that in Germany the old weights and measures disappeared in two years." As a matter of fact, they have not disappeared in over forty years. On Dec. 18, 1911, the following provision was adopted by the German Bundesrat, because English weights and measures are extensively used in the German textile industry: "The use of English weights and measures is permitted in the manufacture of textile goods and in the buying and selling of such goods for export. The metric system is compulsory in the textile industry only for the calculation of piece work wages." We have become familiar with the metric fallacy, but it would seem as if we might be spared such glaring examples of it in a book of conversion tables.

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Practical Cotton Calculations, by Ernest Whitworth; 4 by 6 1/2, 144 pages; Fibre & Fabric, Boston, Mass. Price $1.

This is the second edition of the work that has won a favorable reputation on its merits. Rules and data are given in concise form. The contents are conveniently arranged for reference and new material relating to silk calculations has been added to this edition.

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Soaps (Les Savons), by Rene Vallier; 156 pages, 4 1/2 by 7 1/2; Gauthier-Villars, Quai des Grands-Augustins, 55, Paris, France. Price $1.50.

This is an illustrated handbook adapted for the manufacturer of soaps either for sale or for his own use. Beginning with a brief historical review of soap manufacture, the contents are arranged in the following order: 1. Raw material for soaps. 2. Soft and hard soaps. 3. Refined soaps. 4. Special soaps. 5. Statistical matter. 6. Analysis of soaps. 7. Appendix. 8. Patents. The text is in French.

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Advanced Textile Design, by Wm. Watson; 461 pages, 6 by 9 1/2; Longmans, Green & Co., New York. Price $4.

This book is a reprint of various articles which have appeared in the Textile Manufacturer, Textile Recorder and Cotton. Following is an abstract of the table of contents: Backed Cloths, Double Cloths, Special Classes of Double Cloths, Wadded and Centre-Stitched Double Cloths and Treble Cloths, Extra Weft Figuring, Extra Warp Figuring, Special Jacquard and Harness Mountings and Systems of Designing, Figured Muslin and Damask Fabrics, Tapestry and Upholstery Cloths and Ingrain Carpets, Fancy Toilet and Quilt Fabrics, Gauze and Leno Fabrics, Jacquard Gauze and Leno Fabrics, Lappet Weaving and Designing, Swivel Weaving and Designing, Weft Pile Fabrics, Turkish Towelling Fabrics, Warp Pile Fabrics, Figured Warp Pile Fabrics, Figured Pile Fabrics in which the Design is due to Color. The work is freely illustrated and puts Mr. Watson's articles in very convenient form for reference.

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The Finishing of Ribbon and Cords (Die Appretur der Bander und Litzen), by Prof. K. Fiedler; 49 pages, 5 1/2 by 8 1/2; Dr. Max Jaenecke, Verlagsbuchhandlung, Leipzig, Germany.

This book deals with a special textile branch that has been neglected by writers and for that reason the volume will be welcomed by those engaged in the finishing of narrow fabrics. It contains many illustrations of the machines and apparatus used in the finishing of ribbons and cords. The text is in German.

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The Industrial Development of Nations, by George B. Curtiss, counselor at law, Binghamton, N. Y.; 3 volumes, 1,883 pages, 6 1/2 by 9 1/2; published by the author. Price $15.00.

This voluminous work is the outgrowth of a book entitled, "Protection and Prosperity," published in 1896. The first volume deals with commercial history to 1650, early England under free trade, modern England under protection, England's return to free trade, protection in continental Europe and other parts of the world, and a tariff sketch of England, Germany and France from 1890 to 1912. In the second volume Mr. Curtiss takes up the tariff history of this country from 1607 to 1789 and gives much interesting information regarding phases of the question which have been greatly neglected. There is an interesting section of the volume devoted to the protective period from 1789 to 1834, which is fol-

lowed by the concluding section dealing with the tariff history of the United States from 1834 to 1860. The third volume begins with a consideration of protective legislation from 1860 to 1890. This is followed by a section dealing with the triumph of democracy and free trade in 1892, the third and concluding portion being devoted to the period from 1896 to 1912. The work is a monument to Mr. Curtiss' industry and enthusiasm. It contains a vast amount of valuable data bearing on a question which will always be with us, but would have been of greater value if the author had taken a broader view of the subject, particularly in dealing with developments during recent years. In the preface Mr. Curtiss acknowledges the assistance received from T. Z. Cowles, editor of the "American Economist" in the production of the work.

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The Textile World (Le Monde Textile); 244 pages, 5 1/2 by 9. A. Rey & Cie, 4 Rue Gentil, Lyon, France. Price $5.

This is the 8th edition of a textile directory covering the various branches of the textile industry in France and other countries. Being a French work the list of French establishments is more complete than is the case with mills in other sections of the world, but the lists outside of France have been very carefully compiled, making the work of value as a reference book.

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Carding and Spinning, by George F. Ivey; 97 pages, 6 by 9; The Clark Publishing Co., Charlotte, N. C. Price $1.00.

This is a second edition of a work that was first published nine years ago. It has proved very popular with cotton carders and spinners, being written by a practical man with the object of giving to his fellow workers a thoroughly practical handbook. The following is an abstract of the contents: Varieties of Cotton; Bale Breakers, Cards; Numbering of Cotton Yarn; Ring Spinning, Mule Spinning; The Spooler, Warpers; The Manufacture of Fine Yarn.

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BUSINESS LITERATURE

The Lunkenheimer Co., Cincinnati, O.

This company have issued a series of booklets describing and illustrating their improved cylinder lubricators, oiling devices, grease cups, regrinding valves, automatic cylinder cocks, oil pumps, water columns, water gauges and gauge cocks, non-return safety boiler stop valves, regulating and screw down check valves, oil cups, reseaters for regrinding valves, whistles, and ground key work for steam, air, water, gas, gasoline, oil, etc.

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Centrifugal Pumps, Bulletin 114; Gould Mfg. Co., Seneca Falls, New York.

An 8-page pamphlet describing and illustrating the Gould new vertical centrifugal pump which is made for service in a pit where the water level is at such a depth below the surface of the ground that the ordinary horizontal shaft pump cannot be used.

Notes on Sampling and Testing; a Handbook of the Manchester (Eng.), Chamber of Commerce, Testing House and Laboratory.

The second edition of this handbook has recently appeared and contains much new material regarding the sampling and testing of textile materials. Although issued primarily to call attention to the work of the Manchester Testing House, the volume will prove of great value as a reference work to all engaged in the handling of textile materials.

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"Superheating." The Heine Safety Boiler Company, St. Louis, Mo.

The first part of this pamphlet is a reprint of a paper from the Journal of the Engineers' Society of Pennsylvania, discussing the steam and fuel economy of superheating the various designs of superheaters, the methods used for obtaining control of the temperature of superheat, and a brief description of the design and operation of the Heine Superheater. The last part of the pamphlet is devoted to abstracts from the transactions of the American Society of Mechanical Engineers on the effect of superheated steam on cast iron. These notes give examples of the serious effects of fluctuating steam temperatures and excessive temperatures. Copies of this pamphlet will be sent to engineers on request to the Heine Safety Boiler Co., St. Louis, Mo.

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Dodge Capillary Self-Lubricating Bearing; The Dodge Mfg. Co., Mishawaka, Ind.

A fourteen-page pamphlet describing and illustrating the capillary self-lubricating bearing. These bearings are self-acting, require little attention, and give more uniform and economical oiling and smoother running machinery.

Industrial Notes

A PROSPEROUS YEAR

Besides paying the regular dividends on their stock, The Textile Finishing Machinery Co. of Providence has declared an extra dividend of 15 per cent. in liquidation of accumulated dividends on the preferred stock, dated January 3, 1911. This extra disbursement will be paid out of the surplus income for the year ending Dec. 31, 1912. Last year 5 per cent. extra was paid. Under the energetic and wise management of E. A. Rusden, this company has been very prosperous during the last few years.

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AN IMPOSTOR

A young man claiming to be William A. Butterworth of the H. W. Butterworth & Sons Company, Philadelphia, Pa., has imposed upon several of their customers and borrowed money on their name. The company wishes us to make the above announcement, so that in case of any future calls they may be guided accordingly.

THE ELECTRIC DRIVE

The Dexter Yarn Co., Pawtucket, R. I., is adding to its power plant equipment a 600 k. w. Curtis turbo-generator with 10 k. w. exciter, three 10 k. w. transformers and a switchboard. The apparatus will be furnished and installed by the General Electric Company.

The Dacotah Cotton Mills, Lexington, N. C., are adding to their equipment for electric drive ten motors ranging from 5 to 75 h. p. and panels. They have been ordered from the General Electric Company.

The Bibb Mfg. Co., Macon, Ga., is arranging for electric drive in its plant and will install 44 motors ranging from 5 to 75 h. p., three 500 kv-a. and two 20 kv-a. transformers and oil switches. The order for the installation has been placed with the General Electric Company.

MARKET FOR COTTON FABRICS IN THE UNITED KINGDOM

Consul General John L. Griffiths, London, Eng.

The trade in waist and dress materials, cotton fabrics, etc., to retail sellers in the United Kingdom is confined almost entirely to wholesale warehousemen, who employ commercial travelers, supplied with large ranges of samples, to visit the retail houses. These wholesale firms are in turn supplied with samples, both for selection and for submission by their travelers to retailers.

Attempts to secure a share of the trade merely by correspondence are likely to prove abortive. The better course is to open a depot in this country, under competent management, to the end that personal representation may be made directly to the wholesalers and that samples may be readily produced for their inspection. Prices could then be quoted f. o. b. London, or if stocks were carried in sufficient quantity, actual price for delivery. Oftentimes wholesalers do not carry stocks of all ranges, but upon securing orders notify the manufacturer to deliver directly to the retail purchaser.

In view of the immense quantity of cotton fabrics manufactured in this country, amounting to more than 7 billion yards per annum, with value at factory of about half a billion dollars, it is apparent that persistent efforts are necessary to secure any considerable trade in the United Kingdom.

WILL SHOW SOMETHING NEW AT PHILADELPHIA

W. T. Lane & Brother, Poughkeepsie, N. Y., have reserved space at the Philadelphia exhibition of hosiery and knit goods manufacturers, and will have something of special interest to show to knit goods manufacturers and hosiery mill men, in the way of baskets and trucks.

It has been their policy to study the peculiar requirements for each line of trade and then make just what is wanted for that line instead of trying to force a stock line of goods on all manufacturers alike, regardless of the peculiar needs of each department.

The result is that they have a great number of styles, suitable to almost every manufacturing requirement.

A. KLIPSTEIN & CO.

John E. Schott, who has for some time past been connected with the Briggs-Shaffner Company of Winston-Salem, N. C., has resigned that position, and from April 1 will represent A. Klipstein & Company of New York, manufacturers and dealers of dyestuff and chemicals in the Atlanta territory, with headquarters in Atlanta.

POWER TRANSMISSION

The Mary-Leila Cotton Mills, Greensboro, Ga., has ordered from the Dodge Manufacturing Company, Atlanta, Ga., a number of rope sheaves, Dodge Firmus transmission rope, shafting, couplings, collars, hangers and iron pulleys, the order representing an investment of about $5,000.

NEW ENGLAND AGENTS

The Hess-Bright Mfg. Company of Philadelphia has appointed for their New England representatives, The Cutter & Wood Supply Company, 68 Pearl St., Boston, Mass. They will handle the Hess-Bright ball bearings and ball bearing hangers in this territory.

THE GOULDS MFG. CO.

The annual meeting of the stockholders of The Goulds Mfg. Co. was held at Seneca Falls, N. Y., Feb. 24. No change was made in the board of directors and the following officers were re-elected: President, N. J. Gould; vice-presidents, D. V. Colby, W. D. Pomeroy, W. E. Davis, W. E. Dickey; secretary, H. S. Fredenburg; treasurer, B. R. Wells, assistant treasurer, E. W. Medden.

PARCELS POST TAGS AND LABELS

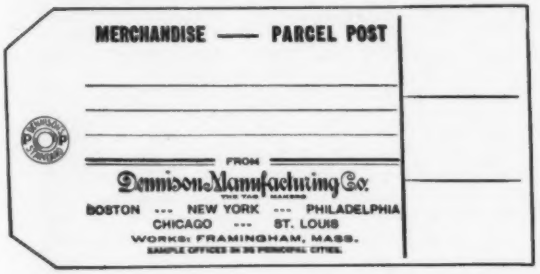
The parcels post has introduced a new feature into the shipping service of manufacturing establishments, and after several months operation, many manufacturers are making considerable use of it in shipping small packages, particularly samples and small lots of shorts.

The Dennison Mfg. Co., whose works are at Framingham, Mass., have as a consequence given considerable attention to the development of special tags and labels for this service.

The question of whether a tag or label should be used depends upon the character of the parcel. On all small and irregularly shaped bundles where there is hardly enough flat space to affix a label quickly and securely, the tag should be used. Packages containing fragile goods, whether they be of regular shape or not, should be tagged and the stamps should be placed upon the tag. The reason for this is that when the tag is used, the postal clerk is able to lay it on a block and cancel the stamps without jarring the contents of the package in the least. If such a parcel were labeled, the full force of the blow of the cancellation stamp would be received on the bundle itself and damage to the contents might result. The tag is also preferable for all packages, whether the goods be fragile or not, in which the contents do not fill the box solidly. In these cases the blow

of the stamp might break down the cover of the box and so destroy the good looks of the parcel

A further field for the tag is on packages whose contents it is necessary to describe for the information both of the postal authorities and of the persons receiving the goods. The tag in this case is a space saver. Its face may be used for the address and the stamps; the instructions and description of contents may be placed upon the reverse. If the gummed label were used in this instance, it would of necessity have to be much larger than the tag, since it could be printed on the face only.



Another important point in favor of the tag is that it offers to the manufacturer a chance to get a good traveling advertisement at a trifling cost

by using the reverse for an attractively printed description of some of the articles he makes. The tag has long been recognized by the progressive business man as a good advertisement and with the introduction of parcel post it becomes still more valuable.

After the parcel post has been in operation for a time and the authorities have received reports from the different cities and towns, it is probable that some recommendation as to the size and shape of tags will be made. At the present time several firms are using tags similar to the one in the illustration and find them very satisfactory. Most combinations of postage can be made with two stamps and all with three.

In the parcel post regulations it is specified that all packages containing fragile or perishable goods be so marked for the information of the postal clerk. The government has already adopted a red tag like the one in the illustration for mail pouches containing fragile articles. It has been suggested that it be made the standard "Fragile" tag.

In considering the field of gummed address labels, it appears that they are best fitted for all square and oblong parcels solidly packed. The ease with which the label could be glued to this class of bundles would make it a big time saver. Handsomely dressed address labels, like tags, may be made to add to the looks of the parcel.

The tags illustrated were made by the Dennison Manufacturing Co., whose works are at Framingham, Mass.

THE "LITTLE GIANT" LIFT AND FORCE PUMP

There is no longer any need to send for the plumber when the pipes are clogged or tolerate noxious gases that come from stopped up sinks and toilets. The "Little Giant" lift and force pump does the work quicker than it takes for a plumber to be on a job and it is ready for use whenever the emergency arises.

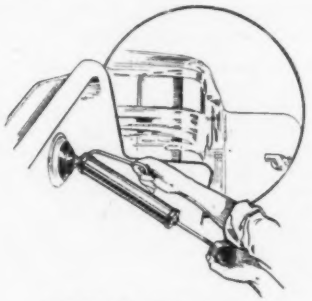
Careless help in the mill throw different kinds

THE "LITTLE GIANT" LIFT AND FORCE PUMP.

of waste into the sinks and the bowls of toilets, not only stopping up the pipes, but also causing disagreeable odors that breed diseases.

The manufacturer of the "Little Giant" force pumps is sending them out with a money back guarantee, if the user is not satisfied after a 60 day trial.

The "Little Giant" is endorsed and used by the



THE FORCE PUMP AT WORK.

U. S. Government. Over five thousand establishments, including public schools, public buildings, factories and hospitals are already using it. Anyone can operate it. There is nothing to break or get out of order. It is manufactured and sold by J. E. Kennedy, 41 Park Row, New York.

WOOL AND MAXIMS

Looking round for a pinch of the concentrated essence of wisdom to offer to the British Association of Wool Buyers, their Chairman found it in a homely wool trade adage: "Never buy what tha' doesn't want and never sell what tha' hasn't got." There are other maxims, either native to the trade or woolen by adoption, equally full of pith and equally serviceable in the compilation of large fortunes. There is, for instance, "Sell and repent—but sell!" The golden rule never to be short of stock when wool is low and never to have too much when prices are high, may be the one that has proved most valuable in times of stress. Complex as it is in some of its aspects, modern business resolves itself ultimately into simple rules—and the wool trade fortunately has not lost the habit of phrasing them in simple language.

Buying and selling have been productive of proverbs by the score—some of them of a faintly disparaging tendency. The French saying that "There are more foolish buyers than sellers" is just the polite Gallic way of summarizing the recognized Yorkshire fast that "A man wi' a dog to sell has a fooil to finnd." The wisest man of his own age saw through the duplicity of the Israelitish buyer, and set down imperishably an account of his conduct: "It is naught, it is naught, saith the buyer; but when he is gone his way, then he boasteth." The practice of British wool buyers shows a general agreement with the 17th century advice: "Buy at a fair, but sell at home", and not one of them doubts that "Who buys hath need of a hundred eyes; who sells hath enough of one." The laws of buying do not change with time, and present wool prices make quite apposite the sententious 16th century reminder, "He that Byth dere, may sel dere." There are two Scots cautions identifiable with the maxim presented by Mr. Collinson for the consideration of top-makers: "Ken when to spend and when to spare, And when to buy and you'll ne'er be bare." To this: "Buy what ye dinna want an' ye'll sell what ye canna spare" comes as a natural corollary.—The Textile Mercury.

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ROOFING PROTECTION AT FORTY DEGREES BELOW ZERO

At this temperature a pail of water placed outdoors will freeze almost before one can turn around, while human toes and ears, unless properly protected, will be quickly frostbitten. According to Peary, the temperature at the North Pole ranges from 10° to 40° below zero, and during his arctic trip the thermometer seldom dropped below the latter point. A temperature of 40° below is quite usual in the vicinity of South Porcupine, Canada, a gold mining settlement 500 miles north of Toronto. When the Northern Electric Heat & Power Co. built their new plant in that town, they had a difficult roofing and insulating problem. They required a material that would prove an effectual insulation against this excessive cold—and which at the same time would not crack and go to pieces under low temperatures. Furthermore, it was necessary to have a roofing that would withstand the melting snows of spring, without rusting or rotting—and that wouldn't dry out and run during the short but often hot Canadian summer. In short, owing to the extreme climatic conditions, a practically indestructible roofing was required. On top of these conditions they required a roofing and siding that would afford fire protection. In 1911 the town had been swept by a terrific fire, resulting in the loss of much valuable property and many lives. The conflagration had taught its lesson.

After carefully considering numerous roofings, they made a thorough test of J-M Asbestos roofing and a siding known as J-M Asbestoside. The test proved so successful that a number of property owners in addition to the Northern Electric Heat & Power Co. adopted these materials in their rebuilding operations. J-M Asbestos roofing and J-M Asbestoside owe their remarkable resisting powers to the fact that they are all-mineral. They contain no vegetable or animal matter, nothing but pure asbestos fibers and Trinidad Lake asphalt built up layer on layer into a sheet of "flexible stone."

The H. W. Johns-Manville Co., the manufacturers of this roofing, claim that it has been on many buildings for over a quarter of a century and has never required repairing, painting, graveling or coating of any kind. They also claim that it is not affected by chemical fumes, gases or acids, nor sparks or burning cinders falling on it from chimneys, cupolas or any other source. It keeps buildings warm in winter and cool in summer, and due to its peculiar mineral construction its coefficient of expansion and contraction is so great that not even the slightest crack is produced when the weather changes from 80° Fahr. to 40° below zero. The roofing is supplied in rolls and is laid on the roof lengthwise, each successive layer being firmly cemented to the last one until the roof is really covered with one continuous blanket or sheet of stone. The same result is produced with the J-M Asbestoside, this material being supplied in sheets instead of rolls.

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DODGE STANDARD PULLEYS

The Dodge standard iron split pulleys are now being made without set screws and with the bushings split ready to put on the shaft. Many tests under actual working conditions have demonstrated that the pulley is held fast to the shaft with absolute security by compression alone. The hub bolts are large in diameter and the clamping power therefore is much greater. This makes set screws unnecessary and as they may be an element of danger, projecting as they do from the hub they have been in the interest of safety and efficiency eliminated. All bushings for Dodge standard split iron pulleys will be split, clearance for clamping being provided and the halves of each bushing wired together bearing a tag showing the shaft size. In the interest of safety all regular made to order Dodge solid iron pulleys and iron center wood rim pulleys, rope sheaves, etc., are fitted with headless set screws which are concealed below the surface of the hub.

THE U. S. GOVERNMENT USES KISSEL KARS

The satisfaction of the United States Government with the five Kissel Kar motor wagons placed four weeks ago in the parcels post service of the city of Washington, has been emphasized in the most substantial manner by an order of ten more cars of the same breed.

The new Kissel Kar wagons will vary from those now in commission in Washington in respect that the bodies will be of the closed panel type instead of screened. The insides are to be provided with hardwood or metal strips on which racks are to be placed for two tiers of hamper or crates. The rear of the cars are to be equipped with doors that can be securely locked. These are to have circular windows. The drivers' seats will have double "lazy backs" so that the carrier may have ready access to the parcels. The cars are to be painted vermilion. Otherwise these government Kissel Kars are the standard 1500-pound wagons with a Kissel 30 h. p. power moto and the other features that have made this model popular.

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SOFTENER FOR COTTON GOODS

Soluble softening oil, manufactured by The Arabol Mfg. Co., 100 Williams St., N. Y. City, is a most effective softening and sizing oil. As a softener it surpasses tallow. Manufacturers like it because it is easy to handle, is always reliable and is not influenced by temperature. It gives a smooth finish to the warps, the threads divide well in the lease rods, and the cylinders of the slasher remain perfectly clean. It is neutral and most suitable for strong and closely woven goods, such as corduroys, velveteens, sateens, twills, umbrella cloth, cambric warps, etc.

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MANUFACTURE OF WOOLENS IN CHINA

Consul General Samuel S. Knabenshue, Tientsin

An inquiry is made regarding the reported intention of the Chinese Government to start the manufacture of woolen cloth in various Chinese cities. This was merely a suggestion on the part of an official, due to a general feeling in favor of the introduction of manufacturing on a large scale. Such an undertaking would be impracticable at the present time.

There is a woolen factory with modern machinery some 8 or 9 miles northwest of Peking. It was erected several years ago to manufacture uniform cloths for the Chinese Army. Its product is a very fair article of the nature of tweed and is used in making winter uniforms for the soldiers. The factory was started with foreigners to superintend the various departments, but these have all been discharged and the factory is now run entirely by Chinese workmen. Whether they will make a success of it remains to be seen. The sentiment, "China for the Chinese," represents the universal attitude of the Chinese to all foreigners. It was not confined to the old Manchu rulers. It permeates every class of Chinese to the very lowest.

The wool produced in China is nearly all a carpet wool. The plains of Mongolia afford splendid grazing ground for large flocks of native sheep of the fat-tailed variety. This wool comes by camel caravan to Peking or Kalgan, thence by rail to Tientsin. The larger portion of this Mongolian wool goes to the United States to be used in the manufacture of carpets. A small portion of it is capable of being woven into coarse fabrics like the tweed referred to, but it is not fitted for the manufacture of fine cloths. To the Chinese wool is simply wool. They have no idea of fine qualities of wool, because they have never seen it.

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TEXTILE MILL CONSTRUCTION

W. E. S. Dyer, Construction Engineer, located in the Land Title Bldg., Philadelphia, has for many years given the matter of textile mill construction careful study and attention and today may be seen mills in various sections of the country which have been designed and erected under his supervision and which are monuments to his ability.

Mr. Dyer has recently planned and erected textile plants for the Henry Taubel & Son Knitting Mill, in Riverside, N. J.; Goodman Bros. & Hinlein, millinery and dress trimmings; power plant in the Alfred Harvey Silk Mills, Forest City, Pa.; a power plant for the Wallace Wilson Knitting Mills, Frankford, Phila.; engineering work for the Karl Schlatter Dye Works, Phila.; Oehrle Bros. Co., upholstery trimmings; engine equipment for the National Underwear Co., Royersford, Pa.; S. Rosenau & Co., millinery trimmings, etc., Phila., and many others.

One concern makes the following statement regarding a building designed and constructed for them by Mr. Dyer:

"The new building is giving us good results in a number of ways. It is solid in its construction and gives ample daylight. The installation of the new engine enables us to change to electric drives, this giving smoother running, also reducing expenses in belting. The electric lighting system is very satisfactory as well as the heating system, and, in fact, the whole building is one which, at any time, we will be pleased to show to anyone contemplating erecting a new plant. The engineering work done by you reflects great credit and has resulted in securing a low rate of insurance."

At the present time Mr. Dyer is erecting a new building for the Diamond Knitting Mills, Philadelphia, including power department, and has also drawn plans and specifications for a large extension for the Saxonia dress goods mill, which will consist of two large buildings and power house, all of which will be equipped with the latest improved appliances for lighting, heating, ventilating and fire protection throughout.

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H. K. MILLER & CO.

The firm of Miller & Merrick has today dissolved by mutual consent. Miss Miller having taken over all assets and all liabilities of the former firm will continue to do a general brokerage business in cotton cloths and yarns under the firm name of H. K. Miller & Co., with office at 170 Summer St., Boston, Mass.

Recent Textile Patents

CLOTH CUTTING Machine. 1,053,331. Edward M. Waring, Brooklyn, N. Y.

CLOTH-LAYING Machine. 1,055,183. Joseph E. Jufe, New York.

COMBING DEVICE. Chenille Weft Fur or Pile. 1,055,093. William T. Smith, Philadelphia.

FABRIC-DRIER. 1,055,235. Walter M. Schwartz, Philadelphia, Pa.

FABRIC RENOVATING and Cleaning Device. 1,055,879. Claude C. Cornwall, Toledo, O.

FABRICS. Machine for Treating Coated. 1,055,430. Andrew Thoma, Cambridge, Mass.

FABRICS to Receptacles. Apparatus for Feeding. 1,053,490. Emil Gminder, Reutlingen, Germany.

JACQUARD MACHINE. 1,055,068. Thomas M. Morrow, Philadelphia, Pa.

KNIT GARMENTS. Trim for. 1,054,233. Rudolph Mueller, Kansas City, Mo.

KNITTING MACHINE Attachment. 1,053,603. William H. Horn, Jr., Philadelphia, Pa.

KNITTING MACHINE. Circular. 1,054,067. Frank Wilcomb, Norristown, Pa.

KNITTING MACHINE Needle Protector and Let-off. 1,054,479. Frank Wilcomb, Norristown, Pa.

KNITTING MACHINE Pattern Mechanism. 1,054,478. Frank Wilcomb, Norristown, Pa.

KNITTING MACHINE Stop Motion. 1,055,460. Joseph Heppeler, St. Joseph, Mich.

LOOM. 1,055,191. Stanislaus Ledoux and Joseph Turcotte, Pawtucket, R. I.

LOOM. Haircloth. 1,054,249. Karl H. Stoebbe, Chemnitz, Germany.

LOOM for Weaving Horsehair Fabrics. 1,054,537. Carl R. Grosslaub, Hainichen, Germany.

LOOM. 1,055,259. Madison L. Christian, Clinton, Ia.

LOOM. 1,054,699. William J. Lutton, Paterson, N. J.

LOOMS for Weaving. Reed for. 1,055,543. Reinhold Koenig, Luettringhausen, Germany.

LOOM Tensioning Device. 1,053,333. Albert B. Weissenborn, Appleton, Wis.

LACE FABRIC. Twist. 1,053,478. Arthur Burgess, Philadelphia, Pa.

LOOM SPREADER. Pile Fabric. 1,054,969. Hector LeDoux, Worcester, Mass.

LOOM SHUTTLE and Spindle. 1,054,391. George M. Cheney, Southbridge, Mass.

LOOM TEMPLE. 1,055,585. Charles D. Whiting, Nashua, N. H.

LOOM HEAD Motion. 1,053,307. Homer F. Livermore, Brookline, Mass.

LOOM SHUTTLE and Bobbin Therefor. 1,053,673. William P. Straw, Manchester, N. H

LOOM. Power. 1,054,734. Josef Wintermayr Vienna, Austria.

LOOMS. Card for Jacquard. 1,053,451. George W. Stokes, Philadelphia, Pa.

LOOMS. Loop Cutting Mechanism for Pile Fabric. 1,054,952. William Wattie, Worcester, Mass.

SHUTTLE. Hand Threading. 1,053,160. Octavien Dalfond, Fall River, Mass.

SHUTTLE. Hand Threading. 1,054,392. Stephen L. Child, New Bedford, Mass.

SHUTTLES. Friction Device for. 1,054,355. Joseph Lacroix, Fall River, Mass.

SPINDLE. 1,055,733. Charles S. Foster, Central Falls, R. I.

SPINNING FRAME. 1,055,660. Eppa H. Ryon, Waltham, Mass.

SPINNING, TWISTING and Like Machines. Hank Clock for. 1,053,312. Albert H. Morton, Lowell, Mass.

SPINNING MACHINES. Building Motion for. 1,054,236. Durell O. Pease, Hampden, Mass.

SPINNING, TWISTING and Like Machines. Spindle for. 1,053,313. Albert H. Morton, Lowell, Mass.

SPINNING RING and Holder Therefor. 1,053,416. Michael H. Maloney, Plymouth, Mass.

STOP-MOTION Mechanism. 1,053,843. Henry J. Marx, Holyoke, Mass.

RAMIE STALKS in the Green State. Machine for Removing Wood from. 1,054,752. Emery Coulon, Blaton, Belgium.

RAMIE STALKS in the Dry State. Machine for Removing Wood from. 1,054,753. Emery Coulon, Blaton, Belgium.

WINDING MACHINE. Cloth. 1,055,409. Edward A. McMillin, North Adams, Mass.

WOOL WASHING Machines. Siphon Overflow for. 1,053,537. Frederick G. Sargent, Westford, Mass.

WOVEN FABRIC. 1,054,556. Victor H. Jennings, Worcester, Mass.

YARN IN SKEINS. Machine for Mercerizing. 1,053,911. Paul Hahn, Niederlahnstein, Germany.

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RECENT TEXTILE TRADE MARKS REGISTERED

55,183. Seersuckers, ginghams, etc. Mark: Triumph. Owner: Aurora Cotton Mills, Burlington, N. C.

62,125. Knitted fabrics. Mark: Tyrolean. Owner: Carbondale Knitting Mills, Carbondale, Pa.